

# NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

WALLOPS STATION, WALLOPS ISLAND, VIRGINIA 23337

TELEPHONE: VALLEY 4-3411 - EXTS. 584 and 579

FOR RELEASE: JANUARY 12, 1967

Release No. 67-1

## ROBERT L. HALLETT RETIRES

### AFTER 20 YEARS AT WALLOPS

Robert L. Hallett, Head of the Communications and Control Section at NASA's Wallops Station, Wallops Island, Va., retired December 29 after 20 years with NACA and NASA. His total Government service covered a span of 24 years.

Mr. Hallett, an electronics engineer, was employed by the U. S. Army Signal Corps at Dover, Del., for several years before joining the staff of the National Advisory Committee for Aeronautics (NACA) at Langley Research Center, Hampton, Va., in October 1946. Shortly after, he was transferred to Wallops as the first electronics engineer to be permanently stationed here. The facility at that time was called the Pilotless Aircraft Research Station (PARS) of the Langley Research Center.

Regarded as one of the "old-timers" at Wallops, "Bob" Hallett played an important part in the development, operation, and maintenance of instrumentation and equipment, including radar,

-more-

telemetry, and communications. He pioneered and was nationally recognized as an expert in the early application of reflection doppler techniques to rocket vehicle tracking problems.

Shortly after the National Aeronautics and Space Administration (NASA) was established and Wallops began its expansion to provide support for the U. S. space efforts, Mr. Hallett was given the job of planning and implementing all range communications and control systems.

Prior to his Government service, he was employed for several years by the Dial Apparatus Division of Bell Telephone Laboratories. He was previously self-employed in the field of radio, and did some experimental work with infrared radiation and photography. He developed several devices in these fields.

A native of Odessa, Del., Mr. Hallett earned a B.S. degree in Electrical Engineering from Pennsylvania State College in 1929. In 1944 he married the former Gertrude Mariva Haight of Knoxville, Pa. They have one son, Robert L., III, age 18. They reside in Milford, Del.

In mid-December his friends and fellow employees at Wallops gave him a luncheon and presented him a new 35mm camera to pursue his hobby of photography during his retirement.



# NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

WALLOPS STATION, WALLOPS ISLAND, VIRGINIA 23337

TELEPHONE: VALLEY 4-3411 - EXTS. 584 and 579

FOR RELEASE: JANUARY 10, 1967

Release No. 67-2

The National Aeronautics and Space Administration's Wallops Station, Wallops Island, Va., has issued invitation for bids for construction of a new Rocket Storage Building in accordance with Specification No. P-1584.

Under U. S. Government procurement practices, the job will be awarded to a small business firm. Bids will be received until 2:00 p.m. EST, January 18, 1967.

Plans and specifications may be obtained from the Procurement Office, Building E-107, NASA Wallops Station.

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# NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

WALLOPS STATION, WALLOPS ISLAND, VIRGINIA 23337

TELEPHONE: VALLEY 4-3411 - EXTS. 584 and 579

FOR RELEASE: Thursday, January 19, 1967

Release No. 67-3

## NASA WALLOPS AWARDS CONTRACT FOR RADAR SURVEILLANCE AIRCRAFT SERVICES TO LOCKHEED

The National Aeronautics and Space Administration, Wallops Station, Wallops Island, Virginia, has awarded a contract for aircraft radar surveillance services to Lockheed Aircraft Service Company, Jamaica, New York.

The dollar value of the Cost-Plus-Fixed-Fee Contract is \$295,860.00 for one year, with renewal option for two additional years. The effective date was January 11, 1967.

This contract will provide flight, instrumentation and maintenance crews and material to operate and maintain two (2) Range Instrumentation U. S. Navy Aircraft, Model EC-121K and EC-121P, at Wallops Station and downrange sites. On loan to NASA from the Navy, the aircraft will provide surface radar surveillance of rocket impact areas for the protection of shipping in international waters.

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Popularly referred to as "Super Connies" (Super Constellations), the planes fly up and down the coast during count-down, scanning the surface of the ocean with radar, and reporting by radio to the Range Control Center at Wallops Station, the position of ships in the impact areas. If ships are present, the launch is delayed until the areas are clear.

Operation and maintenance of the aircraft from Wallops Station will commence on February 15, 1967. The planes were previously based at John F. Kennedy International Airport in New York.

It is estimated that 15 contractor personnel will be assigned at Wallops Station to perform the required services.

Lockheed Aircraft Service Company was one of three companies submitting proposals for furnishing these services.

-END-



# NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Wallops Station, Wallops Island, Virginia 23337  
TELEPHONE: VALLEY 4-3411 - EXTS. 584 and 579

FOR RELEASE: JANUARY 31, 1967

Release No. 67-4

## TWO SOUNDING ROCKET EXPERIMENTS

LAUNCHED AT WALLOPS,

THIRD TO FOLLOW

Two related experiments were conducted in quick succession today by the National Aeronautics and Space Administration at Wallops Island, Va. Measurements were made to test a theory developed by scientists to help explain the relation of high absorption of radio waves in the ionosphere to seasonal temperature variations in the upper atmosphere.

The launchings were conducted for scientists of the University of Illinois, the NASA Goddard Space Flight Center, and the GCA Corporation of Bedford, Mass.

First to leave the launch pad, at 1:51 p.m. EST, was a 55-pound payload equipped to obtain an electron density profile in the lower ionosphere. The instrument package was boosted to a peak altitude of approximately 193 kilometers (121 statute miles) by a Nike-Apache sounding rocket.

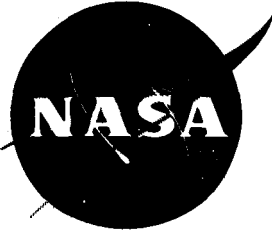
-more-

The experiment was conducted during a period of high absorption of radio waves by the ionosphere--that is, when the ionosphere tended to absorb rather than reflect radio signals. The condition of the ionosphere was tested by ground based instrumentation prior to launch.

A few minutes later, at 2:11 p.m. EST, a supporting Nike-Cajun grenade experiment was sent aloft over the Atlantic. Purpose of this flight was to supply upper atmosphere temperature support data in the region of 80 to 90 kilometers. Wind and temperature data were obtained by measuring speed and direction of the sound waves generated by grenade detonations, as recorded on sensitive microphones on the ground. Temperature and the speed of sound waves are directly related.

To conclude the series at Wallops, a second Nike-Cajun grenade experiment will be conducted within the next few days, possibly tomorrow. The launch will take place during a time of normal absorption conditions in the ionosphere.

-END-



# NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

WALLOPS STATION, WALLOPS ISLAND, VIRGINIA 23337

TELEPHONE: VALLEY 4-3411 - EXTS. 584 and 579

FOR RELEASE: Wednesday, May 10, 1967

Release No. 67-18

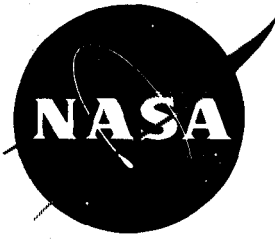
The National Aeronautics and Space Administration's Wallops Station, Wallops Island, Va., has issued invitation for bids for services and materials necessary for exterior painting of nine (9) industrial-type buildings and one (1) tower in accordance with Specification No. P-1656.

Under U. S. Government procurement practices, the job will be awarded to a small business firm. Bids will be received until 10:30 a.m. EDT, June 2, 1967.

Plans and specifications may be obtained from the Procurement Office, Building E-107, NASA Wallops Station.

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# NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Wallops Station, Wallops Island, Virginia 23337

TELEPHONE: VALLEY 4-3411 - EXTS. 584 and 579

FOR RELEASE: MAY 15, 1967

Release No. 67-19

## CONTRACT AWARDS

More than \$1.3 million in major contracts were awarded during the period January 1 through April 30, 1967, by the National Aeronautics and Space Administration's Wallops Station in support of its operations.

Contracts of \$25,000 or more are listed below:

-- To Hayes, Seay, Mattern, and Mattern, Roanoke, Va., in the amount of \$31,434.00 for architect and engineering services for renovation of power distribution system.

-- To American Engineers, Richmond, Va., in the amount of \$51,433.00 for the preparation of Phase II - Master Site Plan.

-- To E. R. Stephens, Chincoteague, Va., in the amount of \$135,200.00 for construction of a payload facility.

-- To J. S. Floyd Corp., Norfolk, Va., in the amount of \$155,555.00 for alterations to Launch Areas 2 and 4.

-- To J. S. Floyd Corp., Norfolk, Va., in the amount of \$179,980.00 for construction of a rocket storage building.

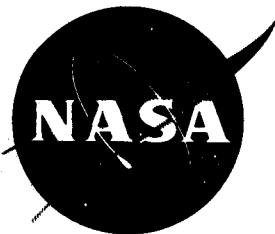
-- To J. S. Floyd Corp., Norfolk, Va., in the amount of \$183,490.00 for renovation of Building No. D-10.

-- To Lockheed Aircraft Service Co., Jamaica, N. Y., in the amount of \$295,860.00 for aircraft services.

-- To Philco-Ford TechRep Division, Fort Washington, Pa., in the amount of \$360,094.00 for engineering support services.

Total cost of these contracts is \$1,393,046.00.

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# NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Wallops Station, Wallops Island, Virginia 23337

TELEPHONE: VALLEY 4-3411 - EXTS. 584 and 579

FOR RELEASE: MONDAY, MAY 29, 1967

Release No. 67-20

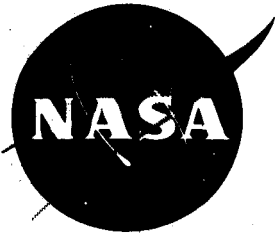
The National Aeronautics and Space Administration's Wallops Station, Wallops Island, Va., has issued invitation for bids as follows:

-- For services and materials necessary for modifications to Runway 4-22 in accordance with Specification No. P-1643. Bids will be received until 10:30 a.m. EDT June 27, 1967.

-- For services and materials for pickup, delivery, handling, packing and crating services in accordance with Specification No. P-1654. Under U. S. Government procurement practices, this job will be awarded to a small business firm. Bids will be received until 10:30 a.m. EDT June 14, 1967.

Plans and specifications may be obtained from the Procurement Officer, Building E-107, NASA Wallops Station.

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# NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

WALLOPS STATION, WALLOPS ISLAND, VIRGINIA 23337

TELEPHONE: VALLEY 4-3411 - EXTS. 584 and 579

FOR RELEASE: MONDAY, JUNE 5, 1967

Release No. 67-21

## WALLOPS HIRES 47 SUMMER

### EMPLOYEES

To help provide summer employment for local young people and teachers, NASA Wallops Station has hired 47 summer employees.

Six of these were hired in support of President Johnson's Youth Opportunity Campaign which began two years ago. These young men and women are in the 16 through 21 age bracket, and are high school graduates or graduating seniors. They were required to file applications with the Virginia Employment Commission at Exmore, Va., or Maryland State Employment Service, Snow Hill, Md. They will earn \$1.40 per hour and will perform duties as "blue collar workers."

Thirty-six young men and women have been employed under the Office and Science Assistant Program, and will be paid at the rate of \$3925 to \$4776 per annum. These students

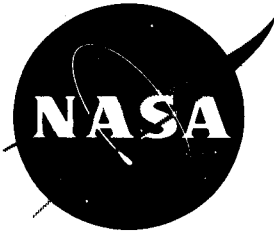
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have been accepted in college and plan to major in mathematics, engineering or the physical sciences as well as in the liberal arts. This program also includes college freshman, sophomores, and juniors. The written test for this program was given last December, January and February.

In addition to these 42 young people, five college and high school faculty members have been employed for the summer. One of these is a college professor (Physics) who will work in Aerospace Technology. The other four are local high school science teachers who will work at various facilities and thereby learn many aspects of rocket launchings and space research.

Some of the employees will begin work in June, others in July.

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# NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Wallops Station, Wallops Island, Virginia 23337

TELEPHONE: VALLEY 4-3411 - EXTS. 584 and 579

FOR RELEASE: MONDAY, JUNE 12, 1967

Release No. 67-22

The National Aeronautics and Space Administration's Wallops Station, Wallops Island, Va., has issued invitation for bids as follows:

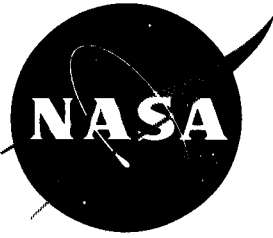
-- For services and materials necessary for addition to Building F-20 in accordance with Specification No. P-1680. Bids will be received until 10:30 a.m. EDT June 26, 1967.

-- For services and materials necessary for resurfacing the Wallops Island Causeway in accordance with Specification No. P-1682. Bids will be received until 10:30 a.m. EDT June 28, 1967.

Under U. S. Government procurement practices, both jobs will be awarded to small business firms.

Plans and specifications may be obtained from the Procurement Officer, Building E-107, NASA Wallops Station.

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# NEWS RELEASE X

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

WALLOPS STATION, WALLOPS ISLAND, VIRGINIA 23337

TELEPHONE: VALLEY 4-3411 - EXTS. 584 and 579

FOR RELEASE: FRIDAY, JUNE 16, 1967

Release No. 67-23

## WALLOPS PERSONNEL ASSIST

### WITH LAUNCH IN BRAZIL

Four Wallops Station personnel assisted with the launch of a NASA-German scientific experiment today at 6:35 a.m. EDT from the Barreira do Inferno rocket range near Natal, Brazil.

The launching was conducted by the National Aeronautics and Space Administration in cooperation with the West German Ministry for Scientific Research and the Brazilian Space Commission utilizing a four-stage ARGO D-4 Javelin sounding rocket.

Purpose of the launch was to flight-test instruments being developed for a West German Research Satellite and is part of a phased program leading to launch of the satellite in 1969 to investigate the Earth's radiation belts.

The Brazilian launch site was chosen because the radiation environment that the satellite will encounter is within the reach of a sounding rocket at that location.

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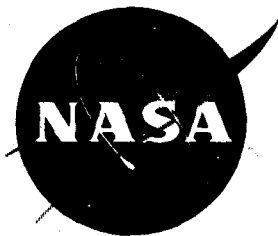
The scientific experiments were provided by several German organizations. Brazil provided the range and launching services and the United States furnished the Javelin, downrange telemetry and two radars.

The rocket was launched into a ballistic arc through the Van Allen radiation belt to a peak altitude of about 650 statute miles (1,000 kilometers). During the flight measurements were made of the energy spectra of protons and electrons, proton flux and solar and galactic alpha particles.

Two launchings were programmed for this phase of the project. The second Javelin launch is scheduled for 3:00 a.m. EDT tomorrow.

Wallops personnel in Brazil assisting with the launch were Roger Navarro (Wallops Station, Va.), Jack Hurdle (Chincoteague, Va.), John Benevento (Stockton, Md.), and Richard Kelly (Wallops Station, Va.).

Several personnel of the Brazilian Space Commission received training in assembly, launch and tracking operations at Wallops last year.



# NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Wallops Station, Wallops Island, Virginia 23337

TELEPHONE: VALLEY 4-3411 - EXTS. 584 and 579

FOR RELEASE: June 21, 1967

X

Release No. 67-24

## ROCKET EXPERIMENT TIMED

### WITH TWO SATELLITE PASSES AT WALLOPS

A rocket experiment coordinated with overpasses of two satellites was launched by the National Aeronautics and Space Administration at Wallops Island, Va., at 3:02 p.m. EDT today.

An ionosphere experiment prepared jointly by the Southwest Center for Advanced Studies, Dallas, Texas, and NASA's Goddard Space Flight Center, Greenbelt, Md., was launched on a 4-stage Javelin rocket. The launch was coordinated with overpasses of the Canadian satellite, Alouette II, and the U. S. satellite, Explorer XXXI, launched "piggyback" into polar orbits by a Thor-Agena B from the Western Test Range in California November 29, 1965. The Javelin probe was sent up between the two satellite passes.

Primary objective of the flight was to measure properties of the ionosphere--ion composition, concentration and temperature and electron concentration and temperature--and to correlate the

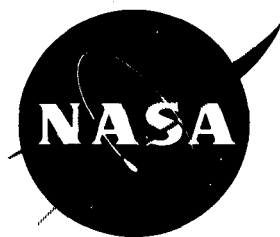
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results with simultaneous measurements made by the two satellites. The ionosphere is a region of charged particles in the upper atmosphere.

The launch vehicle was a 48-foot Javelin (ARGO D-4) sounding rocket. The 120-pound payload was boosted to a peak altitude of 493 statute miles. Data were telemetered to ground stations during the flight. No recovery operation was involved.

Project Scientist is Thomas W. Flowerday of the Southwest Center for Advanced Studies. R. G. Plihal was the Goddard Vehicle Manager. William L. Lord was Project Engineer for Wallops Station, with Paul A. White serving as Launch Pad Supervisor.



# NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

WALLOPS STATION, WALLOPS ISLAND, VIRGINIA 23337

TELEPHONE: VALLEY 4-3411 - EXTS. 584 and 579

FOR RELEASE: SUNDAY, July 9, 1967

Release No. 67-25

## CHEMICAL CLOUDS TO BE VISIBLE

### ALONG EAST COAST

A National Aeronautics and Space Administration chemical experiment will send huge and easily visible colored clouds wafting along the eastern coast of the United States between sunset July 10 and sunrise July 11.

Weather conditions permitting, the first of five vapor cloud launchings is scheduled for Monday at 9:01 p.m. EDT. The other vapor experiments are to be fired at approximately 1:00, 3:30, 4:15, and 5:00 a.m. EDT Tuesday, July 11.

The dusk-to-dawn firings for meteorological research in the upper atmosphere will be at NASA's Wallops Station on the Virginia Coast.

If weather conditions are unfavorable Monday night, the launchings will be attempted on successive nights until fired.

Both sodium vapor and trimethylaluminum (TMA) experiments will be conducted in this series. Two-stage solid propellant

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Nike-Apache research rockets will be programmed to eject trails of vapor from about 50 to 125 statute miles altitude.

Sodium vapor, easily observable because of its chemical reaction to sunlight, will be used for the dusk and the final experiment in the morning. The huge clouds, which are formed by wind dispersion of the vapor, glow in sunlight at high altitudes above the dark earth. They take on a glowing reddish-orange hue and can be seen by residents of the East Coast several hundred miles from the launch site.

TMA vapor trails will be used in the nighttime firings. The wind-formed TMA clouds have a faint bluish-white appearance.

The prime purpose of these experiments is to measure wind velocities and directions at various altitudes in the upper atmosphere. Data on these conditions are obtained by photographing the motion of the trails continuously from a number of ground-based camera sites within a 100 mile radius of Wallops Island. Clear weather is required to obtain good photography.

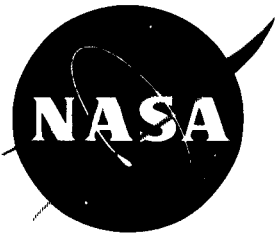
The launches in the current series are timed to provide scientists with information on the changes in wind conditions which may occur between sunset and sunrise, with particular emphasis on the wind profile in the period following midnight.

The experiments are being conducted for the GCA Corporation, Bedford, Mass., under contract to the Goddard Space Flight Center, Greenbelt, Md., which is responsible for carrying out NASA's meteorological research in the upper atmosphere. The program is under the overall responsibility of NASA's Office of Space Science and Applications.

J. F. Bedinger of the GCA Corporation is the Project Director. W. S. Smith of the Goddard Space Flight Center is the Project Scientist. Roger L. Navarro is the Wallops Station Project Engineer.

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# NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

WALLOPS STATION, WALLOPS ISLAND, VIRGINIA 23337

TELEPHONE: VALLEY 4-3411 - EXTS. 584 and 579

FOR RELEASE: JULY 18, 1967

Release No. 67-26

The National Aeronautics and Space Administration's Wallops Station, Wallops Island, Va., has issued invitation for bids for services and materials necessary for repairs to Gate House U-10 in accordance with Specification No. P-1694.

Under U. S. Government procurement practices, the job will be awarded to a small business firm. Bids will be received until 10:30 a.m. EDT August 2, 1967.

Plans and specifications may be obtained from the Procurement Office, Building E-107, NASA Wallops Station.

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# NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

WALLOPS STATION, WALLOPS ISLAND, VIRGINIA 23337

TELEPHONE: VALLEY 4-3411 - EXTS. 584 and 579

FOR RELEASE: IMMEDIATE, AUGUST 9, 1967

Release No. 67-27

## WALLOPS LAUNCHES SIX

### EXPERIMENTS OVERNIGHT

The National Aeronautics and Space Administration conducted six experiments in a 9-hour period last night and early today from its Wallops Island, Va., Station.

Five of the payloads were chemical cloud experiments launched at 10:43 p.m., 1:00 a.m., 3:58 a.m., 4:47 a.m. and 5:28 a.m. EDT.

The dawn firing was a sodium vapor experiment which generated reddish-orange clouds visible for hundreds of miles along the East Coast. The other four payloads consisted of trimethylaluminum (TMA) vapor trails which formed blue-green clouds high above the earth.

The payloads were flown on Nike-Apache research rockets and the vapor trails were ejected at altitude ranges of about 50 to 125 statute miles.

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Purpose of these experiments was to measure wind velocities and directions at various altitudes in the upper atmosphere. Data on wind conditions are obtained by photographing the motion of the trails from five camera sites within a 100-mile radius of Wallops Island.

The launchings were conducted for the GCA Corporation, Bedford, Mass., under contract to NASA's Goddard Space Flight Center, Greenbelt, Md. Benjamin Jackson was the Wallops Station Project Engineer, responsible for coordinating pre-launch, launch, and tracking operations.

At 7:27 a.m. today a sixth experiment was conducted involving a small live animal payload with a white rat on board. A modified Arcas sounding rocket boosted the payload to an altitude of approximately 25 miles out over the Atlantic Ocean. The payload descended by parachute and was recovered by helicopter from the surface of the ocean. Upon return to Wallops Station, the white rat was examined and found to be in good condition.

The launch was part of a Bio-Space Technology Training Program now in progress at Wallops. Purpose of the project is to assist biological experimenters in evaluating the engineering and operational aspects of space flight research.

Jan Neville was the Wallops Project Engineer for this launch.



# NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

WALLOPS STATION, WALLOPS ISLAND, VIRGINIA 23337

TELEPHONE: VALLEY 4-3411 - EXTS. 584 and 579

FOR RELEASE: WEDNESDAY, AUGUST 30, 1967

Release No. 67-28

NASA TO PROBE

IONOSPHERE

OVER PUERTO RICO

ADD

The National Aeronautics and Space Administration will conduct three sounding rocket flights from a launch site in Puerto Rico during the week of September 4, 1967.

The instrumented payloads, planned for launch in a 24-hour period, will probe the lower regions of the ionosphere up to about 200 kilometers.

Measurements will be made of electron densities and temperatures, collision frequencies, ion densities, and solar radiation. Data will be telemetered during the flights to ground receiving and recording stations at the launch site.

The flight payloads will make ionospheric measurements simultaneous with ground-based measurements taken by the Arecibo Ionospheric Observatory at Arecibo, Puerto Rico. The

-more-



Observatory is approximately 50 kilometers west of the launch site.

Primary purpose of the launchings in Puerto Rico is to make a comparison of rocket measurements and simultaneous measurements taken by the giant radar-radio telescope of the Observatory, operating as a backscatter sounder.

It is desirable but not mandatory that the three launches take place within a 24-hour period, to measure ionospheric properties and their changes as the Earth rotates. The pre-dawn, daytime, and night-time launchings are scheduled to occur at 5:45 a.m., 4:08 p.m., and 8:01 p.m. Puerto Rico time (which is the same as Eastern Daylight Time).

The launch site is on the airport at Vega Baja, Puerto Rico ( $18^{\circ} 29' N$ ,  $66^{\circ} 26' W$ ). The location is on the north coast of Puerto Rico about midway between San Juan and Arecibo. It is the same launch site used last year for several sounding rocket launches by Air Force Cambridge Research Laboratories.

The firings will be made in a northwesterly direction with impacts occurring in water approximately 160 kilometers (100 statute miles) from the launch site. No recovery is involved.

Primary experimenters are Professor Sidney A. Bowhill of the University of Illinois, Urbana, Ill., and Dr. Leslie G. Smith of the GCA Corporation, Bedford, Mass.

The Project is under the direction of NASA's Office of Space Science and Applications with E. R. Schmerling as Program Scientist and John R. Holtz as Program Manager. Wallops Station, Wallops Island, Va., has management responsibility for the Puerto Rico Expedition. Robert T. Long of the Program Management and Liaison Branch is Project Manager.

Launch and tracking equipment from the NASA Mobile Launch Facility at Wallops Station was shipped to the launch site. Approximately 15 Wallops engineers and technicians are required to operate the facility.

The launch vehicle will be the two-stage Nike-Apache research rocket, supplied by NASA's Goddard Space Flight Center. The fully assembled vehicle and payload is about 25 feet long and 16.5 inches in diameter (first stage). It weighs about 1500 pounds, develops 42,000 pounds thrust at liftoff, and is capable of boosting a 50-pound payload to 200 kilometers altitude (125 statute miles).

The Arecibo Ionospheric Observatory is the world's largest radar-radio telescope. The reflector, made of 1/2 inch square

wire mesh, is 1,000 feet in diameter. Main purpose of the antenna is to study, in greater detail than has previously been accomplished by radar techniques, the Earth's ionosphere. This is a layer of the atmosphere ranging from about 50 to several thousand kilometers above the Earth. The antenna is also used as a "listening post" for radio signals from outer space.

The Observatory is operated by Cornell University for the Advanced Research Projects Agency of the U. S. Department of Defense.

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# NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

WALLOPS STATION, WALLOPS ISLAND, VIRGINIA 23337

TELEPHONE: VALLEY 4-3411 - EXTS. 584 and 579

FOR RELEASE: SEPTEMBER 12, 1967

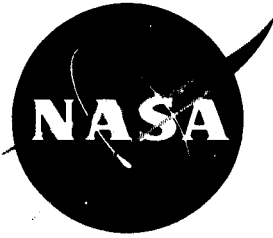
Release No. 67-29

The National Aeronautics and Space Administration's Wallops Station, Wallops Island, Va., has issued invitation for bids for services and materials necessary for New Launch Complex at Wallops Island in accordance with Specification No. P-1718.

Bids will be received until 10:30 a.m. EDT October 17, 1967.

Plans and specifications may be obtained from the Procurement Office, Building E-107, NASA Wallops Station.

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# NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Wallops Station, Wallops Island, Virginia 23337

TELEPHONE: VALLEY 4-3411 - EXTS. 584 and 579

FOR RELEASE: Tuesday, September 19, 1967

Release No. 67-30

## WALLOPS TO LEASE LAND

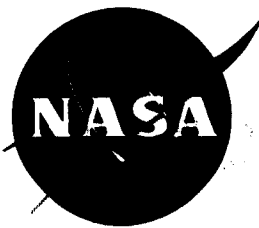
### TO FARMER

The National Aeronautics and Space Administration's Wallops Station has issued Invitation No. P-1703 for bids for land lease of Government property for farm use. Bids will be received until 10:30 a.m. EST November 1, 1967.

The property consists of five (5) parcels of land comprising 83.29 acres located on the Wallops Main Base. The lease is for one year with an option of up to five years.

Anyone interested in leasing this farm land can obtain copies of the Invitation and additional information from the Procurement Office, Building E-107, NASA Wallops Station (Ext. 363).

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# NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Wallops Station, Wallops Island, Virginia 22337

TELEPHONE: VALLEY 4-3411 - EXTS. 584 and 579

FOR RELEASE: MONDAY, SEPTEMBER 25, 1967

Release No. 67-31

More than \$1.6 million in major contracts were awarded during the period May 1 through August 31, 1967, by the National Aeronautics and Space Administration's Wallops Station in support of its operations.

Contracts of \$25,000 or more are listed below:

-- To J. S. Floyd Corp., Norfolk, Va., in the amount of \$25,762.00 for additions to Building F-20.

-- To Paul Marror Company, Wilmington, Del., in the amount of \$25,910.00 for an Electrical Load Test Unit.

-- To Pavement Seals, Inc., Norfolk, Va., in the amount of \$25,980.00 for Slurry Sealing of Spalled Surfaces.

-- To Ocean Electric Corp., Norfolk, Va., in the amount of \$27,800.00 for construction of a Cable Tray System.

-- To Birsch Construction Corp., Norfolk, Va., in the amount of \$32,266.00 for resurfacing Wallops Island Causeway.

-- To General Electric Company, Lutherville, Md., in the amount of \$32,502.00 for two-way communications equipment.

-- To Ocean Electric Corp., Norfolk, Va., in the amount of \$38,200.00 for installation of telephone cable.

-- To Northern Radio Company, Inc., in the amount of \$39,743.00 for Frequency Shift Tone Keying Equipment.

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-- To University of Virginia, Charlottesville, Va., in the amount of \$43,150.00 for Engineering Technician Training and Re-Training Program.

-- To Scientific Atlanta, Inc., Atlanta, Ga., in the amount of \$64,880.00 for Antenna Array, Pedestal, and Servo Control System.

-- To L. B. Smith, Inc. of Va., Baltimore, Md., in the amount of \$67,945.00 for a Mobile Crane.

-- To Harvey Mears, Chincoteague, Va., in the amount of \$83,057.00 for freight delivery services.

-- To J. S. Floyd Corp., Norfolk, Va., in the amount of \$169,721.00 for modifications to steam generation plant.

-- To Milgo Electronic Corp., Miami, Fla., in the amount of \$205,000.00 for digital data acquisition equipment.

-- To Birsch Construction Corp., Norfolk, Va., in the amount of \$748,670.00 for modifications to runway.

Total cost of these contracts is \$1,630,586.00.

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# NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

WALLOPS STATION, WALLOPS ISLAND, VIRGINIA 23337

TELEPHONE: VALLEY 4-3411 • EXTS. 584 and 579

FOR RELEASE: MONDAY P.M.  
OCTOBER 2, 1967

Release No. 67-32

## BARIUM LAUNCHES TO COLOR SKY OF EAST COAST

With favorable weather conditions, the National Aeronautics and Space Administration will launch barium vapor clouds into the upper atmosphere from Wallops Island, Va., at sunset no earlier than October 3 and 4.

The huge glowing green and purple clouds may be visible over much of the eastern United States, hundreds of miles from the launch site.

Objectives of the experiments are: (1) to obtain measurements of electric fields and wind motion in the upper atmosphere by photographing and tracking the movement of ionized barium clouds; and (2) measurement of attenuation on passage of radio signals through the ionized barium plasmas.

-more-



Barium vapor releases will occur as the rocket ascends at about 75, 115, and 140 statute miles, forming three distinct clouds. An RF transmitter on board the rocket will transmit radio signals down through the artificial clouds, and receivers on the ground will determine the degree of attenuation or interference caused by passage of the signals through the ionized vapor. The clouds will be photographed from several camera sites along the East Coast.

The twilight launchings are scheduled for 7:18 p.m. EDT each evening on a Nike-Tomahawk research rocket. If weather conditions are unfavorable, attempts will be made on successive nights, with slight variations in launch times.

The clouds first appear light green tinged with red. They then turn purple in elongated patterns along the lines of the Earth's magnetic field. The clouds may extend across the sky for several hundred miles and be visible for 30 minutes to one hour.

The experiments are being conducted for the Air Force Cambridge Research Laboratories, Bedford, Mass. N. W. Rosenberg of AFCRL is the Project Scientist. William T. Burns is the Project Engineer for Wallops Station.



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# NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

WALLOPS STATION, WALLOPS ISLAND, VIRGINIA 23337

TELEPHONE: VALLEY 4-3411 - EXTS. 584 and 579

FOR RELEASE: SUNDAY, OCTOBER 8, 1967

Release No. 67-33

## SCOUT RAM-C EXPERIMENT

### SCHEDULED AT WALLOPS

A space flight experiment to study methods for preventing loss of radio signals from reentering spacecraft will be conducted by the National Aeronautics and Space Administration from Wallops Island, Va., on or after October 12, 1967.

The test, designated RAM-C, is a continuation of NASA's Project RAM (Radio Attenuation Measurement) to study the problem of communicating through the ionized plasma created when a spacecraft reenters the Earth's atmosphere at high velocities.

The all-solid propellant Scout launch vehicle will be used to send the 267-pound instrumented experimental payload on an eight minute ballistic flight 725 miles across the Atlantic Ocean. Liftoff is scheduled for 10:00 a.m. EDT October 12. The spacecraft is expected to come down in the ocean 150 miles northeast of Bermuda.

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Primary purpose of the experiment is to evaluate the use of water spray to break down the shield of ionized gas which causes the interruption to the radio signals.

A secondary objective is to test the use of an X-band telemetry system as a means of transmitting telemetry while the Very High Frequency (VHF) signal is interrupted.

The cone-shaped spacecraft is 51 inches long and 26 inches in diameter at the base and has a 12-inch diameter hemisphere nose. The instrumentation includes two VHF telemetry transmitters, one of which transmits data continuously in real time. The other is used in conjunction with a continuous loop tape recorder to provide a second transmission of the same data, delayed until after the spacecraft emerges from the blackout. The tape loop time is about 45 seconds. Effectiveness of the water spray to restore communications will be known as soon as signal strengths recorded in real time are correlated with data received from the on-board tape. All data will be radioed to ground receiving stations during the flight, and no attempt will be made to recover the spacecraft.

After the first two Scout stages have carried the spacecraft to an altitude of about 700,000 feet, it is guided to a

reentry trajectory of 15 degrees. Third and fourth stages propel the package downward; then it is separated from the fourth stage at about 350,000 feet. The experiment begins a few seconds later when the spacecraft is 300,000 feet above the ocean, traveling at 17,000 miles per hour (25,000 feet per second).

The experiment is initiated by ground command and controlled by an on-board programmer which controls the quantity and times of water release through solenoid valves.

Water is injected at three points on the spacecraft; one point is on the nose cap, the other two on each side of the spacecraft. Nitrogen gas is used as the pressurizing agent.

In addition to Wallops Station, downrange tracking and data acquisition will be provided by stations on Bermuda, at Coquina Beach, N. C., and on board two ships and three aircraft near the impact area.

A series of Arcasonde meteorological rockets will be launched from Bermuda before and after the RAM-C experiment, to collect upper atmospheric density, temperature, and wind data.

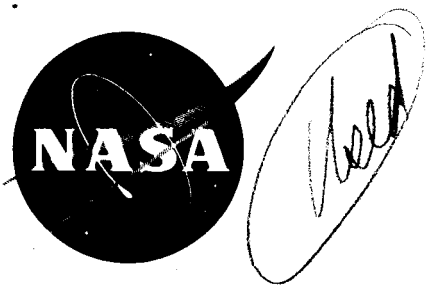
The RAM-C spacecraft was designed and fabricated by the Langley Research Center, Hampton, Va. Ling-Temco-Vought, Dallas, Texas, is responsible for the Scout rocket.

Theo E. Sims is the Langley Project Manager for the experiment. R. D. English, Langley, is Project Manager for Scout.

Robert T. Duffy of the Wallops Flight Test Division will serve as Test Director for countdown and launch. Joseph R. Duke is Assistant Test Director and Project Engineer, responsible for coordinating Range and tracking operations.

Jack Levine, NASA Headquarters Office of Advanced Research and Technology, is RAM-C Project Officer.

- END -



# NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

WALLOPS STATION, WALLOPS ISLAND, VIRGINIA 23337

TELEPHONE: VALLEY 4-3411 - EXTS. 584 and 579

FOR RELEASE: OCTOBER 19, 1967

Release No. 67-34

## REENTRY COMMUNICATIONS TEST

### LAUNCHED AT WALLOPS

A rocket-propelled 267-pound payload plunged back into the Earth's atmosphere at 17,000 miles per hour today in a National Aeronautics and Space Administration test to study methods for preventing loss of radio signals from reentering spacecraft.

A four-stage, all solid-propellant Scout launch vehicle sent the cone-shaped spacecraft from Wallops Island, Va., on an arching trajectory over the Atlantic Ocean. Liftoff occurred at 1:33 p.m. EDT. About eight minutes later the spacecraft impacted 725 miles downrange, approximately 150 miles northeast of Bermuda.

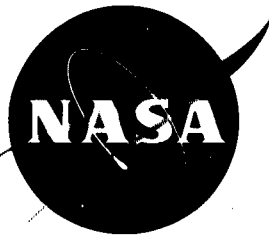
The test is a continuation of NASA's Project RAM (Radio Attenuation Measurement) to study the problem of communicating through the ionized plasma created when a spacecraft reenters the Earth's atmosphere at high velocities.

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Primary purpose of this experiment is to evaluate the use of water spray to break down the shield of ionized gas which causes the interruption to radio signals. Preliminary data indicated that the experiment was successful.

The RAM-C spacecraft was designed and fabricated by the Langley Research Center, Hampton, Va., with Theo E. Sims serving as Project Manager and R. D. English as Vehicle Manager. For Wallops Station, Robert T. Duffy was Test Director for countdown and launch, and Joseph R. Duke was Assistant Test Director and Project Engineer, responsible for coordinating Range and tracking operations.

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# NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Wallops Station, Wallops Island, Virginia 23337

TELEPHONE: VALLEY 4-3411 - EXTS. 584 and 579

FOR RELEASE: SUNDAY, NOVEMBER 26, 1967

Release No. 67-35

*(See Dee Conroy)*

*MS 2.1.67  
67-35*

AEROBEE ROCKET FLIGHTS

TO STUDY ANIMAL BEHAVIOR

IN ARTIFICIAL GRAVITY FIELD

The National Aeronautics and Space Administration will launch, no earlier than November 30, the first in a series of four Aerobee 150-A rockets to study the behavior of white rats in an artificial gravity field.

The 300-pound payload, with two white rats on board, will be launched in a suborbital trajectory over the Atlantic Ocean from Wallops Island, Va.

The experiment is designed to determine the feasibility of conducting longer term gravity-level preference studies in space. It will explore the minimum level of gravity needed by biological organisms during space flight and may provide information useful in the design of space stations.

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The Aerobee payload, which is expected to reach a peak altitude of about 100 statute miles, will create artificial gravity through centrifugal action during 5 minutes of weightlessness. The two arms of the payload will be extended and de-spun after rocket burn-out, producing a centrifuge with artificial gravity levels between 0.35 and 1.65 g's.

The project will utilize the adaptive behavior of animals, allowing them to select their own gravity level by walking along a tunnel runway in the extended arms. When an animal is at the end of the runway nearest the axis or center of rotation, it will be exposed to low gravity. At the end farthest away from the center of rotation, the animal is exposed to a higher gravity level because of the larger radius of rotation.

Each animal will determine its own gravity level by selecting a position along the runways or tracks. Data on the movement and position of the animals will be telemetered to ground receiving stations during the flight.

In the free fall or weightless condition which exists in spacecraft orbiting around the Earth, artificial gravity can be created by rotating the spacecraft like a centrifuge. One

of the most important single problems now faced by spacecraft designers is the amount of artificial gravity, if any, that should be engineered into future spacecraft by rotation.

The response of man to prolonged exposure to gravity levels between the Earth's level of 1 g, and the zero g of space flight, is largely unknown. Scientists lack information on the amount of gravity required to assure continuous and efficient functioning of biological systems in space.

The Aerobee gravity level preference payload was designed and fabricated by engineers and technicians at NASA's Wallops Station. David F. Detwiler is the Wallops Project Manager.

The project is part of NASA's Office of Space Science and Applications' Behavioral Biology Program, with Dr. Richard E. Belleville as Project Scientist.

The experiment was designed by scientists at the University of Kentucky, under the direction of Dr. K. O. Lange.

Numerous ground-based tests at the University of Kentucky's Wenner-Gren Aeronautical Research Laboratory have been conducted with white rats and other small animals. Tests on trained rats indicate a definite preference for Earth's gravity when exposed to gravity fields of 1 g and above. The preference for gravity below 1 g can be measured only during free-fall.



# NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

WALLOPS STATION, WALLOPS ISLAND, VIRGINIA 23337

TELEPHONE: VALLEY 4-3411 - EXTS. 584 and 579

FOR RELEASE: December 5, 1967

Release No. 67-36

## WALLOPS LAUNCHES WHITE RATS IN ARTIFICIAL GRAVITY EXPERIMENT

An experiment to study the behavior of white rats in an artificial gravity field was launched at 2:11 p.m. EST today from Wallops Island, Va.

This was the first in a series of four Aerobee 150-A rockets to carry a 300-pound payload with two white rats on board.

Purpose of the experiment is to explore the minimum level of gravity needed by biological organisms during space flight. Results may provide information useful in the design of future space stations.

Artificial gravity levels were created through centrifugal action during the 5 minutes of weightlessness. The animals were allowed to select their own gravity level by walking along a tunnel runway in the extended arms of the payload.

The payload reached a peak altitude of 85 statute miles and impacted in the Atlantic Ocean 70 miles downrange.

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# NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

WALLOPS STATION, WALLOPS ISLAND, VIRGINIA 23337

TELEPHONE: VALLEY 4-3411 - EXTS. 584 and 579

FOR RELEASE: THURSDAY, DECEMBER 28, 1967

Release No. 67-37

## WALLOPS HAS BUSY YEAR, LAUNCHES OVER 350 EXPERIMENTS

More than 350 scientific experiments left the launch pads on NASA's Wallops Island, Va., in 1967.

These launchings were conducted for teams of scientists in government, universities, industry, and foreign countries. Many were designed for upper atmosphere and meteorological research. Others involved investigations in the ionosphere, solar physics, astronomy, biological studies, and in-flight testing of instrumentation and equipment.

Off-base launch operations this year included projects in Puerto Rico, Brazil, Alaska, and assistance with the Italian San Marco-B satellite launch from a platform in the Indian Ocean off the east coast of Kenya, Africa.

A joint project between Japan and the U. S. in March-April resulted in the launch of 10 pairs of Japanese and U. S. meteorological rockets, to conduct comparative

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meteorological research and compare the performance and payload systems of the two vehicles. Eighteen of the rockets were launched in a period of 19 hours.

Sixteen (16) personnel from France, Germany, Japan, and Spain came to Wallops for training in 1967, and a total of 104 persons from 14 foreign countries visited the Installation.

During the year three experiments were launched in conjunction with satellite overpasses, to correlate measurements taken by the rocket-borne instruments with satellite data.

Several series of sodium and barium vapor cloud experiments were sent aloft to measure high altitude winds and electric fields in the Earth's magnetosphere. The chemicals produced multi-colored artificial clouds visible for hundreds of miles.

In August a group of 55 bioscientists participated in a Bio-Space Technology Training Program at Wallops lasting three weeks.

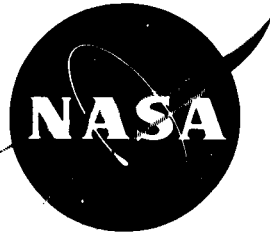
The Puerto Rico Expedition in August-September involved three launchings for the University of Illinois, Urbana, and the GCA Corporation, Bedford, Mass. Measurements were made of ionospheric properties, in conjunction with the giant

radar-radio telescope of the Ionospheric Observatory at Arecibo, Puerto Rico.

On October 19 a RAM (Radio Attenuation Measurement) experiment was launched on a Scout vehicle, to study the water spray technique for improving radio communications with a spacecraft during high speed reentry into the Earth's atmosphere. For the first time, this mission required use of the Wallops high speed computer to generate and transmit command signals to the spacecraft. Utilizing radar data from a radar site in Bermuda, in real time computations, the computer automatically sent commands via Bermuda to the RAM spacecraft in flight, to start the water ejection experiment at precisely the right instant.

On December 5, another unique experiment to study the behavior of white rats in an artificial gravity field was launched successfully on an Aerobee vehicle. During the flight, two trained white rats were able to select their own gravity level by walking along two tunnel runways in the extended arms of the 300-pound payload. The payload was designed and built by engineers and technicians at Wallops, in cooperation with scientists from the University of Kentucky.

These were but a few of the many experiments and projects which made up a busy year for Wallops.



# NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Wallops Station, Wallops Island, Virginia 23337

TELEPHONE: VALLEY 4-3411 - EXTS. 584 and 579

FOR RELEASE: Thursday, December 28, 1967

Release No. 67-38

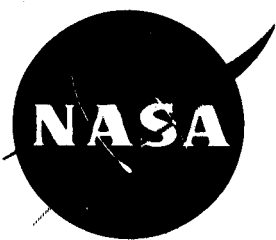
## LAUNCH COMPLEX CONTRACT AWARDED

The National Aeronautics and Space Administration today announced the award of Contract No. NAS6-1479(C) for the construction of a new launch complex to Doyle and Russell, Inc., 823 West 21st Street, Norfolk, Virginia. The amount of the firm fixed priced contract is \$1,233,644.00.

The work consists of constructing an assembly shop, launch pad and mobile shelter, launch terminal building, liquid fuel storage area, launch control building and substation enclosure.

The estimated completion time is 365 days.

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# NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

WALLOPS STATION, WALLOPS ISLAND, VIRGINIA 23337

TELEPHONE: VALLEY 4-3411 - EXTS. 584 and 579

FOR RELEASE: THURSDAY, FEBRUARY 1, 1968

Release No. 68-1

## WALLOPS EMPLOYEE TO ATTEND

### INDIAN RANGE DEDICATION

Robert T. Duffy, Assistant Chief of the Flight Test Division of NASA Wallops Station, will attend the dedication ceremony of the equatorial launch range at Thumba, India, February 2. He received an invitation from the Indian National Committee for Space Research (INCOSPAR) and will be a guest of the Indian Government.

The dedication will be conducted by Mrs. Indira Gandhi, Prime Minister of India, with U Thant, Secretary General of the United Nations as chief guest. The dedication will be marked by the launching of two Indian payloads on sounding rockets furnished by the National Aeronautics and Space Administration.

The Thumba Equatorial Rocket Launch Station (TERLS) was established by INCOSPAR in 1963, and began operation on

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November 21 that year, when the first Nike-Apache rocket carrying a sodium vapor payload was fired.

The Indian Government offered to make the facility available to other nations for space research, and in 1965, it was accorded U. N. Sponsorship for continuing operation. The facilities at TERLS are available to scientists from all member states of the U. N.

Under cooperative agreements between NASA and INCOSPAR, Wallops Station has played a significant part in the development of the Range. In 1962 Duffy went to India and assisted INCOSPAR in the selection of a location for the launch site. The site is approximately 2 miles long and  $1\frac{1}{2}$  miles deep. It is located on the geomagnetic equator near Trivandrum, on the southwestern tip of India. Launchings are conducted over the Arabian Sea.

In 1963, ten INCOSPAR scientists and engineers received training at Wallops for periods of several months. Their training included vehicle preparation and launching, range instrumentation and operations, and all other activities required to operate a rocket launching and tracking station. While at Wallops they designed their range with engineering and technical assistance from Wallops personnel.

Two Wallops personnel, Jim Andrews and Roy Hindle, were on hand at the Thumba range to assist INCOSPAR with the launch of their first experiment in November 1963. In the winter of 1964, Duffy again went to India to serve as an advisor for a series of scientific launches, and at that time the range became fully operational. Now more than 50 experiments have been conducted from the site.

In addition to training and personnel assistance, NASA launching and tracking equipment from Wallops has been on loan to the Thumba range.

Duffy left Wallops January 29 for the dedication ceremony and will return about February 5. A native of Wilmington, Del., he has been employed at Wallops since 1952. He lives at Pocomoke City, Md., with his wife, a son, and two daughters.

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# NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Wallops Station, Wallops Island, Virginia 23337

TELEPHONE: VALLEY 4-3411 - EXTS. 584 and 579

FOR RELEASE: SUNDAY, FEBRUARY 18, 1968

Release No. 68-2

## CHEMICAL CLOUDS SCHEDULED

### AT WALLOPS

Seven chemical cloud experiments are scheduled for launch at Wallops Island, Va., between sunset Monday, Feb. 19 and twilight the next morning.

Because of the nature of the experiments, the firings will be conducted by the National Aeronautics and Space Administration only if the weather is perfectly clear. The tests will be delayed from day to day for bad weather.

Three different chemicals--triethylborane (TEB), trimethylaluminum (TMA), and sodium--will be used in the series, to continue the study of short term and seasonal variations in wind structure in the upper atmosphere. Similar tests were conducted at Wallops in January and July 1966, and August 1967 by NASA's Office of Space Science and Applications.

The artificial clouds may be visible hundreds of miles away, particularly the sodium vapor which will be used in the final pre-dawn experiment. The other two chemicals form faintly

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luminous, pale blue and white clouds. Sodium has a more spectacular reddish-orange color as it interacts with sunlight above the dark earth.

The first launch, using TEB, is scheduled about 6:00 p.m. EST Monday. It will be followed by a second TEB and four TMA's at two-hour intervals through the night, with a final about 6:30 a.m. Tuesday, using sodium vapor.

In all experiments the chemical will be ejected at heights of 50 to 90 miles, as the Nike-Apache plunges downward, so as to minimize interference with other experiments carried.

Wind data are obtained by photographing the motion of the trails continuously from five camera sites within a 100 mile radius of Wallops. Photo work requires clear weather. The payloads will be instrumented to measure airglow, and the ionosphere.

The first two rockets will be equipped with photometers for observing airglow in sunlight above the dark earth (first launch) and in darkness (second launch), to get a vertical profile (or chart) of atomic oxygen. The nose cone will be ejected about 35 miles up. The rocket will zoom upward to a peak of about 100 miles, then fall into the ocean.

The five other payloads will carry Langmuir probes for measuring electron energy distribution.

The experiments are being conducted in cooperation with the GCA Corporation, Bedford, Mass., under contract to NASA's Goddard Space Flight Center, Greenbelt, Md. J. F. Bedinger of the GCA Corporation is the Project Director. W. S. Smith of the Goddard Space Flight Center is the Project Scientist. William T. Burns is the Project Engineer for Wallops Station.

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# NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

WALLOPS STATION, WALLOPS ISLAND, VIRGINIA 23337

TELEPHONE: VALLEY 4-3411 - EXTS. 584 and 579

FOR RELEASE: Thursday, February 22, 1968

Release No. 68-3

## WALLOPS LAUNCHES SIX

### EXPERIMENTS OVERNIGHT

The National Aeronautics and Space Administration conducted six chemical cloud experiments between sunset last night and dawn today from its Wallops Island, Va., Station.

Liftoff times were 6:17 p.m., 12:09 a.m., 1:30 a.m., 3:00 a.m., 4:30 a.m., and 6:02 a.m. EST. There were seven launches scheduled in this series. The second launch planned for 10:30 p.m. was cancelled because of payload problems.

Three different chemicals--triethylborane (TEB), tri-methylaluminum (TMA), and sodium--were used in this series, to continue the study of short term and seasonal variations in wind structure in the upper atmosphere. Similar tests were conducted at Wallops in January and July 1966, and August 1967.

The dawn firing was a sodium vapor experiment which generated a reddish-orange cloud visible for hundreds of miles

-more-

along the East Coast. The other five payloads consisted of TEB (first one) and TMA (the next four) vapor trails which formed pale green and blue clouds, less visible than the sodium.

The payloads were flown on Nike-Apache research rockets and the vapor trails were ejected at altitude ranges of about 50 to 90 miles. Data on wind conditions were obtained by photographing the motion of the trails from five camera sites within a 100-mile radius of Wallops Island.

The first rocket was equipped with a photometer for observing airglow in sunlight above the dark earth to get a vertical profile (or chart) of atomic oxygen. The five other payloads carried Langmuir probes for measuring electron energy distribution.

The launchings were conducted in cooperation with the GCA Corporation, Bedford, Mass., under contract to NASA's Goddard Space Flight Center, Greenbelt, Md. William T. Burns was the Wallops Station Project Engineer, responsible for coordinating pre-launch, launch, and tracking operations.

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# NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

WALLOPS STATION, WALLOPS ISLAND, VIRGINIA 23337

TELEPHONE: VALLEY 4-3411 - EXTS. 584 and 579

FOR RELEASE: SUNDAY, FEBRUARY 25, 1968

Release No. 68-4

## SOLAR X-RAY SATELLITE

### SCHEDULED AT WALLOPS

The National Aeronautics and Space Administration and the United States Naval Research Laboratory will launch no earlier than February 29 a satellite to measure and monitor solar X-ray and selected ultraviolet emissions.

NRL-NASA Solar Explorer B is scheduled for launch from NASA's Wallops Station, Wallops Island, Va., aboard a four-stage Scout rocket. This is the latest in a series of NRL solar radiation (SOLRAD) satellites for monitoring solar X-radiation throughout the solar cycle.

A key feature of the satellite, to be designated Explorer XXXVII when orbited, is a digital data storage system which takes information from three of the solar radiation detectors over a 14-hour period by readout on ground command. Other solar radiation data are transmitted in real-time over a standard analog telemetry system.

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The international scientific community has been invited to acquire real-time data directly from the satellite.

The Sun is now in the ascending part of its activity cycle with maximum solar activity expected in late 1969. Solar Explorer B, by measuring and monitoring solar X-ray emissions and providing immediate data to interested scientists, is expected to improve forecasts of ionospheric conditions which affect short-wave radio communications. This information will be used in a warning system for major solar flares which may be hazardous to manned space activities.

The satellite is similar to Explorer XXX, launched Nov. 19, 1965, by Navy and NASA from Wallops Island. It is still operating on an orbit of 600 by 410 miles.

The 198-pound spacecraft is 12-sided, 27 inches high and 30 inches across. A central band contains X-ray photometers, Geiger tubes, solar aspect systems and attitude control and spin nozzles. Electric power is supplied by 24 solar cell panels on the satellite's vertical surface and a rechargeable battery pack.

The spin-stabilized satellite will be placed in a 525-mile circular orbit inclined 60 degrees to the Equator.

Satellite commands and acquisition of both stored and real-time scientific data will be done at the NRL Tracking and Command Station, Blossom Point, Md.

NASA's Goddard Space Flight Center, Greenbelt, Md., will track the satellite and support NRL in acquisition of telemetered data.

The Scout launch vehicle is managed by NASA's Langley Research Center, Hampton, Va.

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# NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

WALLOPS STATION, WALLOPS ISLAND, VIRGINIA 23337

TELEPHONE: VALLEY 4-3411 - EXTS. 584 and 579

FOR RELEASE: Tuesday, March 5, 1968

Release No. 68-5

*Duplicate*

## SOLAR EXPLORER SATELLITE

### LAUNCHED AT WALLOPS

The National Aeronautics and Space Administration and the Naval Research Laboratory today launched a satellite to measure and monitor solar X-ray and selected ultraviolet emissions during the ascending phase of the Sun's 11-year cycle.

Developed by the NRL and referred to prior to launch as the NRL-NASA Solar Explorer B, the 198-pound spacecraft was placed in orbit by a four-stage Scout from NASA's Wallops Station, Wallops Island, Va. Liftoff occurred at 1:28 p.m. EST. After launch the satellite was designated Explorer XXXVII.

This was the 12th satellite launched by Scout from Wallops Island since 1961. Nine are still in orbit.

A key feature of Explorer XXXVII is a digital data storage system which takes information from three of the solar radiation detectors over a 14-hour period. It transmits information back to Earth by readout on ground command. Other solar

-more-

radiation data are transmitted in real-time over a standard analog telemetry system.

The international scientific community has been invited to acquire real-time data directly from the satellite.

The Sun is now in the ascending part of its activity cycle with maximum solar activity expected in late 1969. Explorer XXXVII (NRL Solrad IX), by measuring and monitoring solar X-ray emissions and providing immediate data to interested scientists, is expected to improve forecasts of ionospheric conditions which affect short-wave radio communications. This information will be used in a warning system for major solar flares which may be hazardous to manned space activities.

The satellite's mission is similar to that of Explorer XXX, launched Nov. 19, 1965 by Navy and NASA from Wallops Island.

NASA's Office of Space Science and Applications (OSSA) has overall direction of the Explorer program and Wallops Station was responsible for vehicle integration and launch operations. Joseph R. Duke was the Coordinator and Project Engineer for Wallops Station. Robert T. Duffy was the Test Director for countdown and launch operations.

Development, construction, and test of the satellite was done by NRL under the auspices of the Astronautics Division, Naval Air Systems Command. R. W. Kreplin and D. M. Horan are Project Scientists and P. G. Wilhelm is the Project Manager for the NRL.

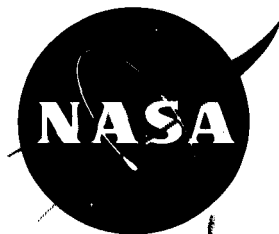
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Preliminary orbital elements are as follows:

|                        |                       |
|------------------------|-----------------------|
| Apogee                 | - 474 nautical miles  |
| Perigee                | - 281       "       " |
| Inclination to equator | - 59.4 degrees        |
| Orbital period         | - 98.77 minutes       |

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# NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Wallops Station, Wallops Island, Virginia 23337

TELEPHONE: VALLEY 4-3411 - EXTS. 584 and 579

FOR RELEASE: SUNDAY, MARCH 10, 1968

Release No. 68-6

## NASA TO LAUNCH EXPERIMENTS

### IN PUERTO RICO

The National Aeronautics and Space Administration will conduct a series of seven sounding rocket experiments from the Vega Baja launch site in Puerto Rico in mid-March.

The instrumented payloads, planned for launch in a 24-hour period March 15-16, will probe the upper atmosphere and the lower regions of the ionosphere up to about 180 miles.

The dates are concurrent with the full moon period, and the launches are scheduled as follows (Puerto Rico time):

Friday, March 15 -- 3:00, 3:30, and 5:30 a.m.  
2:00, 2:30, and 3:00 p.m.

Saturday, March 16 -- 3:00 a.m.

If weather or technical difficulties cause a delay, the launchings can be made as late as March 18-19.

As the schedule indicates, the experiments will be conducted in roughly three groups approximately 12 hours apart, to detect diurnal (day/night) changes in the atmosphere and ionosphere. The ionosphere is a region of charged particles

-more-

beginning at about 35 miles above the Earth and extending hundreds of miles out into space. Its energy state is determined by radiation from the Sun and it is constantly changing.

Other objectives are comparison of the electron and ion temperature and electron density measurements taken by rocket-borne instruments with simultaneous measurements taken by the Arecibo Ionospheric Observatory; simultaneous measurement of density and temperature of neutral particles and of electron temperature and density; and measurement of atmospheric density, pressure, and temperature in the region from about 10 to approximately 70 miles altitude.

Rocket measurements of ionospheric properties will be compared with simultaneous measurements taken by the giant radar-radio telescope of the Arecibo Ionospheric Observatory, operating as a backscatter sounder. The Observatory is near Arecibo, Puerto Rico, approximately 25 miles west of Vega Baja.

Two or three of the launches may be coordinated with an overpass of the Canadian Alouette II satellite, to make possible a three-way comparison of rocket, satellite, and observatory measurements of the ionosphere.

The launch site is located on the Vega Baja Airport near Camp Tortuguero, on the north coast of Puerto Rico about midway

between San Juan and Arecibo. The site was used by NASA for three launchings last September, and has been used on two occasions by Air Force Cambridge Research Laboratories, Bedford, Mass.

All the firings will be made in a northwesterly direction with impacts occurring in water as far out as 100 miles. Data will be telemetered during the flights to ground receiving and recording stations at the launch site. The payloads will not be recovered.

The experiments are being conducted by NASA's Goddard Space Flight Center, Greenbelt, Md., and the University of Michigan, Ann Arbor. N. W. Spencer of Goddard is the Project Director. L. H. Brace is the Goddard Project Scientist. G. R. Carignan is the Field Director and University of Michigan Project Scientist.

The project is under the direction of NASA's Office of Space Science and Applications. John R. Holtz is Program Manager.

NASA's Wallops Station, Wallops Island, Va., has management responsibility for the Puerto Rico Expedition. Robert T. Long of the Program Management and Liaison Branch is Project Manager.

Launching and tracking equipment of the NASA Mobile Launch Facility at Wallops Station was shipped to the launch site.

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About 20 Wallops engineers and technicians are required to operate the facility.

Four Nike-Tomahawk and three Nike-Apache research rockets will be used to launch the experiments. Both are two-stage vehicles using solid-propellant rocket motors.

The Nike-Apache is about 25 feet long and weighs approximately 1500 pounds. It develops 42,000 pounds of thrust at liftoff, and is capable of boosting a 50-pound payload to 125 statute miles altitude. The Nike-Tomahawk is about 30 feet long and weighs approximately 1850 pounds. It can achieve altitudes in excess of 200 statute miles, depending on the launch elevation angle and payload weight.

The Arecibo Ionospheric Observatory is operated by Cornell University for the Advanced Research Projects Agency of the Department of Defense. The 1000-foot reflector, made of 1/2-inch square wire mesh, is constructed in a natural bowl in the Puerto Rico highlands. Its primary purpose is to study, in greater detail than has previously been accomplished by radar techniques, the Earth's ionosphere. The antenna is also used as a "listening post" for radio signals from outer space.



# NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Wallops Station, Wallops Island, Virginia 23337

TELEPHONE: VALLEY 4-3411 - EXTS. 584 and 579

FOR RELEASE: MONDAY, MARCH 18, 1968

Release No. 68-7

## NASA PUERTO RICO

### EXPEDITION SUCCESSFUL

The National Aeronautics and Space Administration launched six sounding rocket experiments at the Vega Baja launch site in Puerto Rico March 17-18. Liftoff times were:

March 17 -- 1:59 a.m. EST  
              2:30 a.m.   "  
              4:28 a.m.   "  
              1:45 p.m.   "  
              2:18 p.m.   "

March 18 -- 2:00 a.m.   "

Purpose of these experiments was to compare rocket measurements of ionospheric properties with simultaneous measurements taken by the giant radar-radio telescope of the Arecibo Ionospheric Observatory. The Observatory is approximately 25 miles west of Vega Baja.

Three Nike-Apache and three Nike-Tomahawk rockets were used to launch the experiments. Five were successful and one

-more-

was unsuccessful. A seventh planned firing was postponed because of problems with the despin mechanism in the Tomahawk rocket and radar tracking difficulties.

NASA's Mobile Range Facility from Wallops with a crew of 21 people conducted the launchings. They will be returning to Wallops in a few days.

Names and addresses of crew members are:

Robert T. Long, Project Manager, Onancock, Va.  
John Benevento, Stockton, Md.  
Harold E. Boone, New Church, Va.  
Ray Brown, Snow Hill, Md.  
Thomas K. Burton, Jr., Wallops Island, Va.  
J. Bryan, Eldorado, Md.  
Orville S. Dix, Pocomoke City, Md.  
George E. Ewell, Silva, Va.  
A. L. Gladding, Hopeton, Va.  
R. V. Gladding, Pocomoke City, Md.  
Malcolm A. Glovier, Pocomoke City, Md.  
E. M. Harte, Parksley, Va.  
Orland E. Howard, Jr., Pocomoke City, Md.  
Robert L. Huey, Pocomoke City, Md.  
Charles S. James, RFD, Pocomoke City, Md.  
Granvil L. Jones, Pocomoke City, Md.  
A. L. Moore, Chincoteague, Va.  
Arthur Watson, Chincoteague, Va.  
Robert L. Wessells, Parksley, Va.  
Robert W. Wessells, Modestown, Va.  
Forrest E. Williams, Jr., Pocomoke City, Md.

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# NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Wallops Station, Wallops Island, Virginia 23337

TELEPHONE: VALLEY 4-3411 - EXTS. 584 and 579

FOR RELEASE: APRIL 17, 1968

Release No. 68-8

## NASA AWARDS CONTRACT

### FOR ORBITING FROG EXPERIMENT

NASA has selected Space Division of Aerojet General Corp. to perform the preliminary design of a spacecraft for basic research on a frog's balance mechanism (otolith) under weightlessness and repeated acceleration.

The contractor will be allotted \$316,776 to prepare the necessary preliminary design and drawings and to test a simulated spacecraft model.

This is the initial step in a NASA Human Factor Systems Program to investigate the functioning of the primary balance mechanism within the inner ear and to determine what changes will occur under zero "g" conditions.

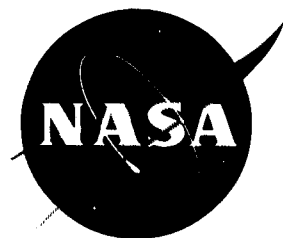
The research project is managed by Wallops Station for NASA's Office of Advanced Research and Technology; Laurence C. Rossi is Project Manager. The Ames Research Center is responsible for the otolith experiment package which was designed by the Johns Hopkins Applied Physics Laboratory.

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Principal investigator is Dr. T. Gualtierotti who developed the experiment while a senior post-doctoral resident research associate at Ames under the sponsorship of the National Academy of Sciences. He is now head of the Department of Physiology at the University of Milan, Italy.

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# NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

WALLOPS STATION, WALLOPS ISLAND, VIRGINIA 23337  
TELEPHONE: VALLEY 4-3411 - EXTS. 584 and 579

FOR RELEASE: APRIL 27, 1968

Release No. 68-9

REENTRY F EXPERIMENT

LAUNCHED AT WALLOPS

The National Aeronautics and Space Administration launched a Scout reentry experiment in aerodynamic heating at 12:19 a.m. EST today from Wallops Island, Va.

Purpose of the experiment, known as Reentry F, was to measure heat transfer in a slender cone at hypersonic speeds for comparison with ground studies. Primary objective was to obtain in flight fundamental research data on aerodynamic heating and the transition from laminar (smooth) to turbulent flow in the boundary layer.

The payload was a graphite-tipped beryllium cone 13 feet long, tapering from 0.1 inch at the nose to 27.3 inches at the base, and weighing 600 pounds.

The experiment was designed by NASA's Langley Research Center, Hampton, Va. Reentry F was the sixth flight in a reentry heating series sponsored by NASA's Office of Advanced Research and Technology (OART).

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Three of the Scout rocket's four stages were used for the experiment. The first two fired on the ascending portion of the flight trajectory, boosting the third stage and payload to a peak altitude of about 115 miles; and the third drove the instrumented payload back into the atmosphere at speeds up to 13,500 miles-per-hour. Impact occurred about 800 miles downrange, northeast of Bermuda.

The payload was built by the General Electric Company's Re-Entry Systems Department under contract to the Langley Center. Ling-Temco-Vought of Dallas, Texas, is prime contractor for Scout vehicle.

Robert T. Duffy was Test Director for the launch and Tom W. Perry, Jr., was the Wallops Station Project Engineer.

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# NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

WALLOPS STATION, WALLOPS ISLAND, VIRGINIA 23337

TELEPHONE: VALLEY 4-3411 - EXTS. 584 and 579

FOR RELEASE: MAY 7, 1968

Release No. 68-10

## CANADIAN ROCKET LAUNCHED

### AT WALLOPS

### IN TEST OF SATELLITE EQUIPMENT

A Canadian Black Brant IV sounding rocket was launched by NASA from Wallops Island, Va., at 1:10 a.m. EDT today.

The flight was conducted to check out some of the instrumentation to be carried later this year in Canada's third ionosphere-probing satellite, and to confirm results of a similar launching last year at the Churchill Research Range in Canada.

A transmitter in the rocket nose cone, designed by scientists of the Defence Research Telecommunications Establishment (DRTE) in Ottawa, artificially created electro-magnetic waves similar to those to be investigated by ISIS "A" (International Satellite for Ionospheric Studies). These waves emanate naturally from near-earth lightning discharges and are called "whistlers" by upper atmosphere scientists. They

-more-



are also generated within the ionosphere by a process not yet fully understood.

Artificial creation of the waves will facilitate investigations at all times in any desired area of the ionosphere. At the present time, these studies can be conducted only when the waves occur naturally.

Today's Wallops Island launch was made when Canada's Alouette II satellite was passing nearby at a height of about 500 miles, to make possible inter-comparison of the data telemetered to Earth by both vehicles. Tracking stations at Wallops Station and on Bermuda received data transmissions from the rocket experiment.

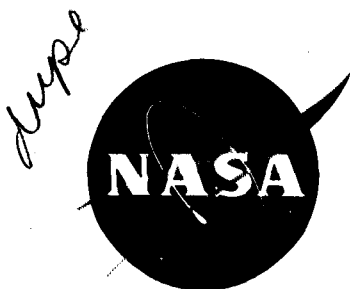
ISIS "A" will be the third in a series of Canadian satellites launched by the U. S., in a joint program between the Defence Research Board of Canada and the National Aeronautics and Space Administration, to investigate the ionosphere by means of satellites. Canada's Alouette I and Alouette II were launched in 1962 and 1965 respectively.

The Black Brant IV, manufactured by Bristol Aerospace Limited, of Winnipeg, is a two-stage rocket 37 feet long with the first and second stages 17 and 10 inches in diameter respectively. Launch weight is 3,100 pounds.

In today's launch, the rocket reached its peak altitude of about 500 miles in eight minutes and landed about 600 miles downrange in the Atlantic Ocean. No attempt was made to recover the nose cone.

Dr. D. J. McEwen was DRTE's project scientist and William Rolfe was their project engineer. William Burns was the project engineer for Wallops Station.

-END-



# NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

WALLOPS STATION, WALLOPS ISLAND, VIRGINIA 23337

TELEPHONE: VALLEY 4-3411 - EXTS. 584 and 579

FOR RELEASE: June 25, 1968

Release No. 68-11

## WALLOPS LAUNCHES WHITE RATS IN ARTIFICIAL GRAVITY EXPERIMENT

An experiment to study the behavior of white rats in an artificial gravity field was launched at 6:51 p.m. EDT Monday, July 24, from Wallops Island, Virginia.

This was the second in a series of four Aerobee 150-A rockets to carry a 300-pound payload with two white rats on board.

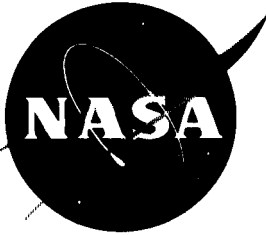
Purpose of the experiment is to explore the minimum level of gravity needed by biological organisms during space flight. Results may provide information useful in the design of future space stations.

Artificial gravity levels were created through centrifugal action during the 5 minutes of weightlessness. The animals were allowed to select their own gravity level by walking along a tunnel runway in the extended arms of the payload.

The payload reached a peak altitude of 89 statute miles and impacted in the Atlantic Ocean 53 miles downrange.

Scientists at Wallops Station characterized the launch as very successful.

- END -



# NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

WALLOPS STATION, WALLOPS ISLAND, VIRGINIA 23337

TELEPHONE: VALLEY 4-3411 - EXTS. 584 and 579

FOR RELEASE: THURSDAY, JUNE 27, 1968

Release No. 68-12

## FLIGHT EXPERIMENT

### FOR STUDY OF MATERIALS

The National Aeronautics and Space Administration today conducted a materials technology flight experiment to test the performance of a phenolic nylon charring ablation material. The experiment was the 7th flown in the Pacemaker series managed for NASA by the Langley Research Center, Hampton, Virginia.

A four-stage solid fueled Pacemaker rocket carrying a 52-pound spacecraft was launched from NASA's Wallops Station, Wallops Island, Virginia, at 12:37 P.M. EDT in a southeasterly direction. The spacecraft reached a speed of 7200 miles per hour and was lowered into the Atlantic Ocean by parachute after a 4 minute flight. A recovery helicopter retrieved the payload which will be returned to Langley Research Center for evaluation. It landed about 127 statute miles from Wallops Island.

The purpose of the experiment was to obtain flight ablation data on the phenolic nylon material which has been extensively tested in a number of arc jet ground facilities throughout the

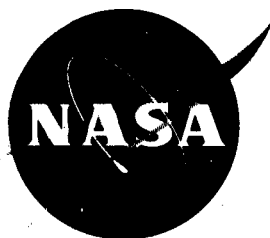
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United States. Heating and ablation sensors and instruments in the spacecraft telemetered information on char formation, heating rates, vehicle performance, and temperatures.

While the primary experiment concerned the phenolic nylon with which most of the spacecraft was covered, panels of three other ablation materials were carried around the base of the vehicle. These included a foamed quartz material prepared by the Lockheed Missiles and Space Company; and ablation material named MOD V by its manufacturer, Avco Corporation; and a foamed Teflon material also produced by Avco.

Langley's Project Manager for the Pacemaker materials technology experiment was Brian J. O'Hare. Wallops Station's Project Engineer was Roger L. Navarro.

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# NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Wallops Station, Wallops Island, Virginia 23337

TELEPHONE: VALLEY 4-3411 - EXTS. 584 and 579

FOR RELEASE: MONDAY, JULY 1, 1968

Release No. 68-13

## WALLOPS OPENS

### NEW FEDERAL JOB INFORMATION CENTER

Expanding its program for improvement of services to the public, NASA Wallops Station has established a Civil Service Job Information Center. Information about employment opportunities with the Federal Government in the State of Virginia will be disseminated.

Since the Eastern Shore is rather isolated from areas where Federal jobs are more plentiful--such as Norfolk, Richmond, and Washington, D. C., this Center will provide a welcome service. It will make Federal job opportunities in Virginia more accessible to Eastern Shore residents. The time and expense of a trip or a telephone call to Norfolk will no longer be a deterrent to seeking Federal employment.

The Center will be located in Building No. F-1 in the Personnel Office at the Wallops Main Base. The guard at the Main Gate will furnish directions and, in addition, the route

-more-

will be well marked with signs. Regular office hours will be 8:00 a.m. to 4:30 p.m. EDT Monday through Friday, except on Federal holidays.

Almost all U. S. Government agencies have offices in Virginia. The most prominent ones are:

|                   |                          |
|-------------------|--------------------------|
| U. S. Navy        | U. S. Post Office        |
| U. S. Army        | Agriculture Department   |
| U. S. Air Force   | National Park Service    |
| U. S. Coast Guard | Internal Revenue Service |
| Social Security   | Justice Department       |

Veterans Administration  
Federal Housing Administration  
General Services Administration  
Health, Education and Welfare Department  
National Aeronautics and Space Administration

More than 80,000 Virginians work in civilian jobs in these government agencies, and each year more than 15,000 jobs become vacant.

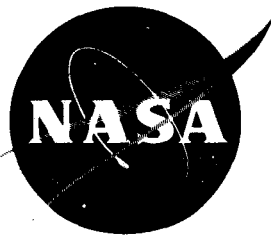
Local residents may want to begin a career with the U. S. Government. Almost every kind of job found in private business or industry can also be found in the Federal Service. Remember that the Federal Government is an Equal Opportunity Employer.

The mailing address is:

Civil Service Job Information Center  
NASA Wallops Station  
Wallops Island, Virginia 23337

The telephone number is: Area Code 703 - 824-3411, Ext. 513.

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# NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

WALLOPS STATION, WALLOPS ISLAND, VIRGINIA 23337

TELEPHONE: VALLEY 4-3411 - EXTS. 584 and 579

FOR RELEASE: Thursday a.m., July 25, 1968

Release No. 68-15

## WALLOPS LAUNCHES 11 UPPER ATMOSPHERE EXPERIMENTS

### IN A 21-HOUR PERIOD

The National Aeronautics and Space Administration's Wallops Station launched a three-part upper atmosphere study consisting of a series of eleven sounding rockets beginning Tuesday evening, July 23, and ending Wednesday evening, July 24.

Six Nike-Apache and five Nike-Cajun vehicles were programmed for launch from Wallops Island, Va., during the 21-hour period. The first two-stage solid-propellant rockets were sent aloft at 8:19 p.m. and 8:46 p.m. EDT Tuesday. The other launches followed at 1:00 a.m., 5:54 a.m., 6:06 a.m., 6:20 a.m., 6:36 a.m., 1:00 p.m., 2:45 p.m., 5:36 p.m., and 5:55 p.m. EDT Wednesday.

The interrelated ionospheric and atmospheric studies were conducted for the NASA Goddard Space Flight Center, the GCA Corporation, and the Universities of Colorado, Illinois, and Michigan.

-more-



The objective of this series of rocket experiments was to continue the investigation of the Earth's upper atmosphere. The experiments are expected to yield new information about the interrelationship of the neutral atmosphere and the ionosphere at altitudes between 50 and 120 kilometers. Specifically, the parameters of neutral atmosphere structure and composition and ionosphere structure were measured.

Purpose of the two University of Colorado experiments was to obtain a vertical profile of the density of nitric oxide in the 75 to 105 kilometer region of the atmosphere.

The joint GCA Corporation/University of Illinois experiments were conducted on four of the rocket flights. The payloads carried instruments to measure electron and ion density and solar radiation in the D-region of the ionosphere, approximately 35 to 50 miles above the earth, whose reflective effects are important to long distance radio communications.

Three grenade launches in this series were joint Goddard/University of Michigan experiments. Prime objective was to detonate a series of grenades at various altitudes and record their sound arrival at ground for the purpose of obtaining

temperature, pressure, and wind data. Secondary objective was to eject two self-inflating radar reflective spheres at different altitudes and radar-track their free-fall for the purpose of obtaining ambient air density measurements and solar heating effects.

Objective of the two University of Michigan payloads was to measure ambient air density by radar tracking two 66 centimeter falling Mylar spheres which were ejected at different altitudes. Solar heating effects in the atmosphere were obtained by comparing the day measurement with the night measurement.

Project Scientist for the GCA Corporation was Dr. L. G. Smith. Technical Director for the University of Illinois was Dr. S. A. Bowhill. Mr. J. W. Peterson was the Project Scientist for the University of Michigan. Project Scientist for the University of Colorado was Mr. Jeffrey B. Pearce and Mr. W. Smith was the Project Scientist for the NASA Goddard Space Flight Center.

Wallops Project Engineers were William T. Burns, Earl B. Jackson, and Dempsey B. Bruton.

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# NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Wallops Station, Wallops Island, Virginia 23337

TELEPHONE: VALLEY 4-3411 - EXTS. 584 and 579

FOR RELEASE: August 22, 1968

Release No. 68-17

## RADIO BLACKOUT TEST

### LAUNCHED AT WALLOPS

A rocket-propelled 264-pound payload plunged back into the Earth's atmosphere at 17,000 miles per hour today in a National Aeronautics and Space Administration test to study methods for preventing loss of radio signals from reentering spacecraft.

A four-stage, all solid-propellant Scout launch vehicle sent the cone-shaped spacecraft from Wallops Island, Va., on an arching trajectory over the Atlantic Ocean. Liftoff occurred at 11:16 a.m. EDT. About eight minutes later the spacecraft, designated RAM C-B, impacted 725 miles downrange from Wallops Island, Va., approximately 150 miles northeast of Bermuda.

The test is a continuation of NASA's Project RAM (Radio Attenuation Measurement) to study the problem of communicating through the ionized plasma created when a spacecraft reenters

-more-

the Earth's atmosphere at high velocities. This is the second test in the RAM C series.

Unlike the previous RAM test in which water was ejected into the plasma stream to restore radio communications, this test was confined to measuring the amount of electrons and ions which build up around the spacecraft.

The RAM C-B spacecraft was designed and fabricated by the Langley Research Center, Hampton, Va., with Theo E. Sims serving as Project Manager and R. D. English as Vehicle Manager. For Wallops Station, Robert T. Duffy was Test Director for countdown and launch, and Joseph R. Duke was Assistant Test Director and Project Engineer, responsible for coordinating range and tracking operations.

-END-



# NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Wallops Station, Wallops Island, Virginia 23337

TELEPHONE: VALLEY 4-3411 - EXTS. 584 and 579

FOR RELEASE: Monday p.m., August 19, 1968

Release No. 68-16

## RADIO BLACKOUT TEST

(RAM C-B)

A space flight experiment to study methods for preventing the loss of radio signals from spacecraft returning to earth will be launched August 22 by the National Aeronautics and Space Administration from Wallops Island, Virginia.

The eight-minute ballistic flight test, RAM C-B, is a continuation of the NASA radio attenuation measurement project to study the problem of communicating through the ionized gas (plasma sheath) created when a spacecraft reenters the earth's atmosphere at great speeds. The test is the second in the RAM C series.

Unlike the previous RAM test, in which water was ejected into the plasma stream to restore radio communications, this test will be confined to measuring the amount of electrons and ions which build up around the spacecraft.

The results of the flight will be used with information

-more-

from the water-ejection experiment, laboratory tests, and theoretical studies to provide a better understanding of the problem of communicating through a plasma sheath.

The all-solid propellant Scout launch vehicle will be used to send the 264-pound RAM payload on a ballistic flight 725 miles over the Atlantic Ocean. The spacecraft is expected to come down 150 miles northeast of Bermuda.

The cone-shaped spacecraft is 51 inches long, 26 inches in diameter at the base, and has a 12-inch-diameter hemisphere nose. The instrumentation includes two VHF telemetry transmitters, one of which sends data continuously in real time.

The other is used in conjunction with a continuous-loop tape recorder to provide a second transmission of the same data, delayed until after the spacecraft emerges from the blackout. The tape loop time is about 45 seconds. Ionization measurements will be made with microwave reflectometers and eight electrostatic probes.

After the first two Scout stages have carried the spacecraft to an altitude of about 700,000 feet, it will be guided to a reentry trajectory of 15 degrees.

Third and fourth stages will then ram the package downward.

-3-

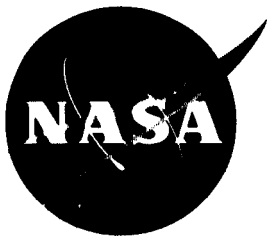
It is separated from the rocket stages when the spacecraft is 300,000 feet above the ocean, traveling at 17,000 miles-per-hour.

Tracking and data acquisition will be provided by stations at Wallops and Bermuda, and on two ships and aircraft near the impact area.

The RAM spacecraft was designed and fabricated by NASA's Langley Research Center, Hampton, Virginia. Ling-Temco-Vought, Dallas, is responsible for the Scout rocket.

Theo E. Sims is the Langley RAM Project Manager. R. D. English, Langley, is Project Manager for Scout. Robert T. Duffy, Wallops Station, will serve as Test Director for count-down and launch. Joseph R. Duke, Wallops, is responsible for coordinating range and tracking operations. Jack Levine, NASA Headquarters, Office of Advanced Research and Technology, is RAM C-B Project Officer.

-END-



# NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Wallops Station, Wallops Island, Virginia 23337

TELEPHONE: VALLEY 4-3411 - EXTS. 584 and 579

FOR RELEASE: IN ALASKA, SEPTEMBER 14, 1968

## ROCKET EXPERIMENTS SCHEDULED

### AT POINT BARROW

The National Aeronautics and Space Administration will begin this month a series of rocket-launched acoustic grenade experiments at Point Barrow, Alaska, to obtain upper atmospheric meteorological data within the Arctic Circle.

The first two Nike-Cajun research rockets are scheduled to be launched between September 16 and 20. These experiments will be coordinated with similar launchings at the Churchill Research Range in Canada.

Six additional rockets in the series are tentatively scheduled to be launched during October, November, and December--two each month.

The first Alaskan launchings are scheduled for September 16. If delayed by weather conditions or the difficulties of coordinating with the other range, they will be rescheduled from day to day through September 20.

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# NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

WALLOPS STATION, WALLOPS ISLAND, VIRGINIA 22337

TELEPHONE: VALLEY 4-3411 • EXTS. 584 and 579

FOR RELEASE: September 20, 1968

## TECHNOLOGY TRAINING SCHOOL GRADUATION

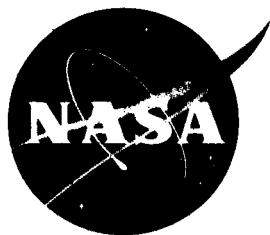
A group of eight engineering technician trainees completed their four-year training program in a graduation exercise on August 30.

Four of the technicians majored in electronic technology and four in mechanical technology. This program combines academic and on-the-job training to prepare qualified trainees to become skilled technicians and leaders in the engineering technician fields applicable to Wallops Station functions. The classes are taught by the University of Virginia.

This was the third graduating class of the Technology Training School since the program was initiated in July 1962. David L. Ridge, Valedictorian, was speaker for the Class of 1968.

Members of the graduating class were: Oliver C. Taylor, Atlantic, Virginia; Robert J. Frostrom, Sr., Pocomoke City, Maryland; Donald W. Shirk, Pocomoke City, Maryland; Richard H. Bradford, Snow Hill, Maryland; David W. Hancock, Stockton, Maryland; Wayne A. Hart, Wallops Station, Virginia; Riley S. Bull, Atlantic, Virginia; and David L. Ridge, South Boston, Virginia.

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# NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Wallops Station, Wallops Island, Virginia 23337

TELEPHONE: VALLEY 4-3411 - EXTs. 584 and 579

FOR RELEASE: WEDNESDAY, October 9, 1968

Release No. 68-18

## SIMULATED HAILSTONE PROJECT

### AT WALLOPS

The speed at which hailstones fall to earth and its effect on their size and growth rate in the atmosphere has been studied in a series of simulation tests conducted by the National Aeronautics and Space Administration at its Wallops Station, Wallops Island, Va.

Simulated hailstones dropped from aircraft during the tests were fabricated from a plastic material (Alathon) in a variety of sizes and surface textures. Each of these plastic hailstones approximates the weight of actual frozen hailstones of similar diameter and surface characteristics.

In the tests now nearing completion, conducted by NASA for the U. S. Air Force Cambridge Research Laboratories, Bedford, Mass., the individual plastic hailstone models were dropped from an Air Force C-130 and a Wallops Queenair airplane. Drop altitudes ranged from 20,000 to 25,000 feet in an area over the Atlantic Ocean six miles east of Wallops where the tests are conducted.

-more-

The plastic hailstones are of varying density, weight, volume and shape, simulating their frozen counterparts which form as a natural phenomenon associated with severe storms over the earth's surface. Sizes vary from 2.4 centimeters (.99 inches) to 9.86 centimeters (3.75 inches). Some of the artificial hailstones are spheroids, some are smooth surfaced, and some are rough surface spheres.

A series of wind tunnel tests had confirmed theories that the size and weight to which naturally-formed hailstones will grow is related to the speed at which they fall and thus the length of time they spend in storm clouds.

As late as 1949 it was generally believed that for hail to grow in excess of 1 or 2 centimeters in diameter, the growing stone had to encounter updraft velocities in excess of their fall speed, thus making it possible for the stone to recirculate several times within the cloud. For the larger stones (exceeding 5 centimeters) this updraft velocity had to exceed 100 mph.

Recently, wind tunnel studies have shown that shape and surface roughness affect the fall speed of an object by changing its drag characteristics.

Tests demonstrated that a sphere with a thin coat of water (therefore smooth) will fall much slower than an ice sphere

which is dry and slightly rough. Because the fall speed of the hailstone has a direct bearing on its final size, the roughness and shape of the stone are important parameters which determine how rapidly it might grow.

Investigators reason that a hail nucleus can be held within an updraft where it grows by collecting super-cooled water drops until its fall speed exceeds the updraft velocity.

Its descent through the clouds bring it through regions of differing water content and updraft velocities. It is the passage of the hailstone through the varying regions which probably gives it the characteristic onion-like layered structure. The final size of the hailstone depends on the vertical extent of the cloud and the length of time the stone remains within it.

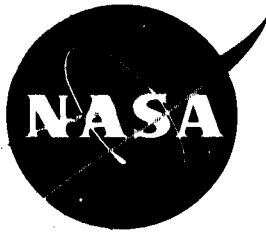
Series of wind tunnel tests on spheres of differing characteristics have shown that there are two ranges of terminal fall speeds for a sphere--the higher range being as much as 3 times greater than the lower range. A roughened sphere might fall at a variety of speeds during its formation and descent to earth.

To check tunnel results in the free atmosphere, the Cambridge Research Laboratories arranged to use Wallops Station radars to track a series of plastic spheres of varying degrees of roughness and measure their fall speeds accurately. Detailed data obtained from the tests will be applied in understanding and predicting the growth of real hailstones.

-4-

Project Coordinators for the Wallops tests are Dick Landry of AFCRL and Gene Godwin of Wallops Station.

-END-



# NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

WALLOPS STATION, WALLOPS ISLAND, VIRGINIA 23337

TELEPHONE: VALLEY 4-3411 - EXTS. 584 and 579

FOR RELEASE: IN ALASKA, OCTOBER 12, 1968

## ROCKET EXPERIMENTS SCHEDULED

### AT POINT BARROW

The National Aeronautics and Space Administration will conduct this month two rocket-launched acoustic grenade experiments at Point Barrow, Alaska, to obtain upper atmospheric meteorological data within the Arctic Circle.

The two Nike-Cajun research rockets are scheduled to be launched between October 14 and 18. These experiments will be coordinated with similar launchings at the Churchill Research Range in Canada.

Four additional rockets are tentatively scheduled to be launched during November and December--two each month.

The Alaskan launchings are scheduled for October 14. If delayed by weather conditions or the difficulties of coordinating with the other range, they will be rescheduled from day to day through October 18.

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# NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Wallops Station, Wallops Island, Virginia 23337

TELEPHONE: VALLEY 4-3411 - EXTS. 584 and 579

FOR RELEASE: FRIDAY P.M., OCTOBER 18, 1968

Release No. 68-19

## INTER-AMERICAN METEOROLOGICAL NETWORK

### MEETING AT WALLOPS

Inter-American weather research by rocket will be the business of a meeting of Argentine, Brazilian and U. S. experts on October 21-23 at the National Aeronautics and Space Administration's Wallops Station in Virginia.

The research is carried out in EXAMETNET (Experimental Inter-American Meteorological Rocket Network), organized to test the effectiveness of multiple sounding rocket sites for obtaining new weather data for the northern and southern portions of the Western Hemisphere.

The cooperative program was established in 1965 by space agencies of Argentina, Brazil and the United States.

In addition to representatives of the organizing countries who will attend, observers have also been invited from Australia, Canada, India, Italy, Japan, Mexico, Pakistan, Peru, and Spain.

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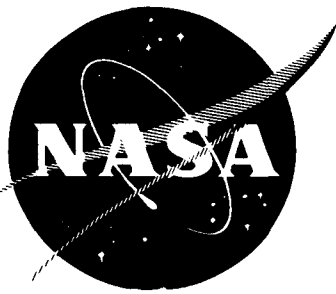
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EXAMETNET provides scientific measurements of the upper atmosphere obtained from payloads of sounding rockets launched from corresponding sites in North and South America. Comparison of the data obtained aids research into the structure and circulation of the atmosphere in the Northern and Southern Hemispheres and the interrelation between them. This information is made available to interested scientists throughout the world.

The October meeting of the EXAMETNET Executive Committee will consider launch schedules, data handling procedures and data publication plans.

-END-





# NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Wallops Station, Wallops Island, Virginia 23337  
Telephone: Valley 4-3411 - Exts. 584 and 579

FOR RELEASE: THURSDAY, November 21, 1968

Release No. 68-21

## Wallops Launches White Rats ✓

### IN Artificial Gravity Experiment

An experiment to study the behavior of white rats in an artificial gravity field was launched at 3:45 P.M. today from Wallops Island, Virginia.

This was the third in a series of four Aerobee 150-A rockets to carry a 300-pound payload with two white rats on board.

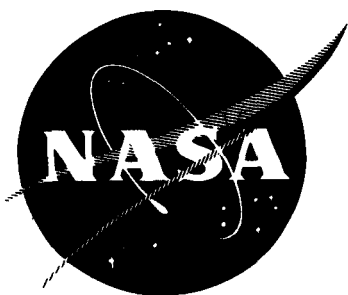
Purpose of the experiment is to explore the minimum level of gravity needed by biological organisms during space flight. Results may provide information useful in the design of future space stations.

Artificial gravity levels were created through centrifugal action during the 5 minutes of weightlessness. The animals were allowed to select their own gravity level by walking along a tunnel runway in the extended arms of the payload.

The payload reached a peak altitude of 101 statute miles and impacted in the Atlantic Ocean 69 miles downrange.

A quick look at preliminary data indicates the experiment was successful.

-END-



# NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Wallops Station, Wallops Island, Virginia 23337

TELEPHONE: VALLEY 4-3411 - EXTS. 584 and 579

FOR RELEASE: DECEMBER 10, 1968

Release No. 68-22

## BARIUM CLOUD PROJECT

Photographs of the earth's magnetic lines of force high in space will be attempted in a joint project of the German Federal Ministry for Scientific Research (BMwF) and NASA next year.

To make the lines of force visible, barium vapor will be released at an altitude of about 20,000 miles by a NASA Scout rocket. The barium will form a glowing ionized cloud. It will be visible to ground observers in a large part of the western hemisphere. Scientists will use special optical equipment to view it.

The barium ions will distribute themselves along a magnetic field line and will produce a long cloud, steadily increasing in length. They thus permit visual mapping of the electromagnetic forces acting in the area in which the barium is released. The technique can be used to measure both the magnetic and electrical fields in space and to study plasma physics effects not possible in the laboratory. The barium experiments can also simulate the interaction of the solar wind with an ionized comet trail.

The barium release technique has been pioneered by Professor Reimar Luest, Director of the Max Planck Institute for Extraterrestrial Physics, Munich. It has been successfully used in cooperative sounding rocket experiments at altitudes of 155-465 miles with launches from NASA's Wallops Station and India's Thumba range in 1966 and 1968 respectively.

The barium release technique requires the ejection of some thirty pounds of barium copper oxide mixture at an altitude of 20,000 miles. The mixture will vaporize when released and ultra-violet radiation from the sun will ionize a portion of the barium.

The agreement on the cooperative high altitude barium vapor project calls for BMwF to provide the payload, two ground observation stations and analysis of the scientific data obtained by them.

NASA will furnish a Scout rocket, conduct launch operations from its Wallops Station and provide tracking and communications services.

NASA will also carry out its own data acquisition program utilizing special optical equipment stationed in both North and South America.

Each agency will bear the cost of its respective responsibilities. Results of the experiment will be available to the BMwF and NASA and, after one year, will be made available to the world scientific community.

The research project is managed by Wallops Station for NASA's Office of Space Science and Applications; William A. Brence is Project Manager and Robert E. Carr is Tracking and Data Acquisition Systems Manager. David Adamson of NASA's Langley Research Center is Project Scientist.

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# NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

WALLOPS STATION, WALLOPS ISLAND, VIRGINIA 23337

TELEPHONE: VALLEY 4-3411 - EXTS. 584 and 579

FOR RELEASE: TUESDAY, JANUARY 28, 1969

Release No. 69-2

## ARTIFICIAL AURORAS EXPERIMENT LAUNCHED FROM WALLOPS

Preliminary analysis of data from the January 26 flight of the Wallops Island electron accelerator experiment indicates the rocket probe which produced an artificial aurora 175 miles above the Virginia coastline was successful.

An Aerobee 350 launched the accelerator experiment package from the NASA Wallops Station facility at 4:45 a.m. January 26. The experiment put out beams of electrons which interacted with the atmosphere and produced excited atoms and light, essentially the same manner of a natural aurora.

The project, designed by Dr. Wilmot Hess, Director of Science and Applications at the NASA Manned Spacecraft Center, is aimed at helping scientists learn more about the aurora. It is the first test of a more ambitious experiment utilizing a similar electron accelerator on board an orbiting spacecraft.

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Observations of the artificial aurora were visually seen by scientists on the ground and the series of pulses were recorded on film by a very sensitive television camera. Professor Neil Davis, University of Alaska, was Project Manager for ground observation and data collection.

When the experiment package reached approximately 60 miles altitude an 85-foot diameter aluminum mylar foil was deployed. The foil acted as a current selector for ionosphere electrons and electrically neutralized the experiment.

The accelerator then put out a series of 100 beam pulses which were aimed downward at the Wallops Island ground station. Although the auroral spots were of relatively low intensity, more than 30 scientists witnessed and recorded the event. The scientists from the NASA, University of Alaska, Stanford Research Institute, the University of Minnesota, Stanford University, John Hopkins University, the Naval Research Laboratory, Lockheed Palo-Alto Research University, Smithsonian Astrophysical Observatory, and the ESSA were located within 100 miles of the NASA launch facility.

Detailed analysis is underway to determine if the auroral intensity, location, and shapes were as predicted. Based on

-more-

a quick look on the preliminary data Dr. Hess described the experiment a success and stated the feasibility of propagating electrons long distances into space has been successfully demonstrated.

-END-

February 1, 1969

FOR IMMEDIATE RELEASE

The Wallops Station of the National Aeronautics and Space Administration, the Chincoteague Station of the United States Coast Guard, the Chincoteague National Wildlife Refuge, Bureau of Sport Fisheries and Wildlife, and the National Park Service announced a joint Open House to be held Saturday and Sunday, April 12 and 13, 1969.

In addition to tours of the respective installations, rocket launching facilities and special space exhibits will be on display at NASA, the old lens system of the Assateague Lighthouse will be shown courtesy of the Eastern Shore Historical Society, a special work-display decoy and art show will be held at the Chincoteague National Wildlife Refuge, and tours of a section of Assateague Island beach will be conducted by the National Park Service.

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# NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

WALLOPS STATION, WALLOPS ISLAND, VIRGINIA 23337

TELEPHONE: VALLEY 4-3411 - EXTS. 584 and 579

FOR RELEASE: SATURDAY, FEBRUARY 1, 1969

Release No. 69-3

## WALLOPS LAUNCHES NINE ROCKETS IN A "SPECIMEN DAY PROGRAM"

The National Aeronautics and Space Administration conducted a series of nine sounding rocket launchings during a 5-hour period yesterday from Wallops Island, Virginia.

The objective of these shots was to contribute to a "specimen day program", a coordinated investigation of winter variability of the D region of the ionosphere above Wallops Island. The rocket-borne experiments made meteorological, ionospheric, and composition measurements of the upper atmosphere during a "winter anomaly" (unusual absorption of radio waves in the upper atmosphere), a phenomena which may occur anytime during January or early February.

Nine vehicles consisting of 2 Nike-Cajuns, 3 Nike-Iroquois, 3 Nike-Apaches, and 1 Arcas were launched beginning at 12:00 noon and ending at 4:53 p.m. EST.

The rocket payloads carried experiments to measure electron densities, ion, oxygen, ozone, and nitric oxide concentrations,

-more-

pressure, temperature, and density in the upper atmosphere to provide a basis for an understanding of the cause of the "winter anomaly."

Experimenters were GCA Corporation, Air Force Cambridge Research Laboratory, University of Illinois, University of Colorado, Goddard Space Flight Center, and Naval Ordnance Test Station California.

Liftoff times were as follows:

|               |            |
|---------------|------------|
| Nike-Apache   | 12:00 noon |
| Nike-Iroquois | 12:30 p.m. |
| Nike-Cajun    | 12:58 p.m. |
| Arcas         | 1:21 p.m.  |
| Nike-Iroquois | 1:36 p.m.  |
| Nike-Apache   | 2:10 p.m.  |
| Nike-Apache   | 4:12 p.m.  |
| Nike-Cajun    | 4:25 p.m.  |
| Nike-Iroquois | 4:53 p.m.  |

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# NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

WALLOPS STATION, WALLOPS ISLAND, VIRGINIA 23337

TELEPHONE: VALLEY 4-3411 - EXTS. 584 and 579

FOR RELEASE: FRIDAY, FEBRUARY 7, 1969

Release No. 69-4

## COLORED CLOUDS TO BE SEEN NEXT WEEK

Weather conditions permitting, huge glowing, colored clouds will be formed high over the mid-eastern coast from sunset Monday, February 10, to dawn the following morning.

The National Aeronautics and Space Administration plans to launch a series of seven rocketborne chemical vapor trail experiments from its Wallops Island, Virginia, Station for meteorological research in the upper atmosphere. The prime objective of the experiments is to measure wind directions and speeds through a region from around 50 statute miles up to 186 miles and the temporal variations which occur throughout the night.

The first firing of the series is scheduled for about 6:06 p.m. EST. A two-stage Nike-Tomahawk sounding rocket is programmed to spew out a trail of sodium vapor from about 50 to 186 miles altitude. The vapor will be wind-formed into an orange-pink cloud easily visible to the naked eye hundreds of miles from the

-more-

launch site. The first launch will be followed by five trimethylaluminum (TMA) experiments launched on Nike-Apache rockets at about two-hour intervals to create vapor trails up to about 100 miles. These trails will disperse into pale white clouds, not easily visible. The last firing, also on a Nike-Apache, is scheduled for about 6:15 a.m. Tuesday, to form a sodium cloud in the same general altitude region as the TMA experiments.

The vapor trail dispersions are recorded by cameras on the ground. The sodium vapor, which glows from the sun's radiations, is employed for the photographic observations in twilight periods. TMA, which emits a much duller glow, is more suited to night observations.

In conjunction with the vapor series, the U. S. Army Ballistics Research Laboratory, Aberdeen, Maryland, is firing six cesium experiments in a comparative study of winds. The cesium will be carried in projectiles fired from a 7-inch gun barrel (at Wallops) to an altitude of 330,000 feet. Cesium will be shot aloft three minutes after each of the first six vapor launches. Dispersion of the cesium, not visible to the unaided eye, is recorded by ground-based radar and Ionospheric Sounding Stations.

The vapor experiments are part of the Meteorological Sounding Rocket Program carried on by the NASA Goddard Space Flight Center,

Greenbelt, Md. J. F. Bedinger of the GCA Corporation, under contract to Goddard, is the Project Director for the series, with W. S. Smith of Goddard, the Project Scientist. Project Engineer for the Wallops launch operations is E. Benjamin Jackson. Overall direction of the program is under the NASA Office of Space Science and Applications.

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# NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

WALLOPS STATION, WALLOPS ISLAND, VIRGINIA 23337

TELEPHONE: VALLEY 4-3411 - EXTS. 584 and 579

FOR RELEASE: FRIDAY, FEBRUARY 14, 1969

Release No. 69-5

## WALLOPS LAUNCHES 13 EXPERIMENTS

### IN A 12-HOUR PERIOD

The National Aeronautics and Space Administration conducted seven chemical cloud experiments between sunset last night and dawn today from its Wallops Island, Virginia, Station.

Liftoff times were 6:11 p.m., 8:00 p.m., 10:19 p.m., 12:00 p.m. (midnight), 2:00 a.m., 4:00 a.m., and 6:13 a.m.

Two-stage sounding rockets were used to carry these chemical payloads -- a Nike-Tomahawk for the first launch and Nike-Apaches for the other six launches.

Two different chemicals--sodium and trimethylaluminum (TMA)--were used in this series, to continue the study of wind structure in the upper atmosphere through a region from around 50 statute miles up to 186 miles. Data on wind conditions were obtained by photographing the motion of the trails from five camera sites within a 100-mile radius of

-more-

Wallops Island. Similar tests were conducted here last February.

The dusk and dawn firings were sodium vapor experiments which generated reddish-orange clouds visible for hundreds of miles along the East Coast. Reports of sightings were received from Pennsylvania, Connecticut, Tennessee, and Indiana. The other five payloads consisted of trimethylaluminum (TMA) which formed pale white clouds, less visible than the sodium.

In conjunction with the vapor series, the U. S. Army Ballistics Laboratory, Aberdeen, Maryland, fired six cesium experiments from Wallops in a comparative study of winds. The cesium was carried in projectiles fired from a 7-inch gun barrel to an altitude of 330,000 feet. Liftoff times were 8:07 p.m., 10:24 p.m., 12:05 a.m., 2:05 a.m., 4:10 a.m., and 6:23 a.m. Three of these experiments were unsuccessful because the chemical was not ejected. Dispersion of the cesium, not visible to the unaided eye, is recorded by ground-based radar and Ionospheric Sounding Stations.

The launchings were conducted in cooperation with the GCA Corporation, Bedford, Massachusetts, under contract to NASA's Goddard Space Flight Center, Greenbelt, Maryland.

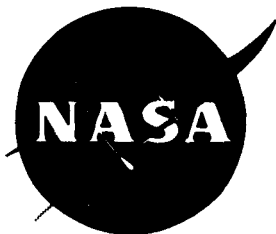
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E. Benjamin Jackson was the Wallops Station Project Engineer, responsible for coordinating pre-launch, launch, and tracking operations.

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# NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

WALLOPS STATION, WALLOPS ISLAND, VIRGINIA 23337

TELEPHONE: VALLEY 4-3411 - EXTS. 384 and 379

FOR RELEASE: MONDAY, MARCH 17, 1969

Release No. 69-6

WALLOPS STATION PLANS FOR OPEN HOUSE

SATURDAY AND SUNDAY, APRIL 12 AND 13

The public is cordially invited to visit NASA Wallops Station on Saturday and Sunday, April 12 and 13, from 10:00 a.m. until 4:30 p.m. Individuals may set their own time limit and visit all of the exhibits or only those they select.

This is a joint event of federal activities in the area including Assateague National Seashore Park, Chincoteague Coast Guard Station, Chincoteague National Wildlife Refuge, ESSA (Environmental Science Services Administration) at Wallops, and NASA Wallops Station. All of these agencies are planning special exhibits and/or tours at their respective facilities.

Many facilities at the Wallops Main Base and the rocket launching sites on Wallops Island will be open. The Main Base and Wallops Island are approximately 10 miles apart. A tour of both areas will require two to four hours.

The Wallops Island part of the tour will be a self-guided "do-it-yourself" riding tour in your own private car. Descriptive

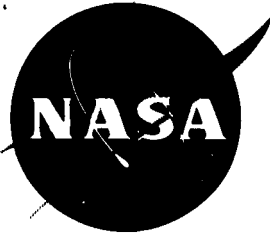
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literature will be provided to point out items of interest as you ride by. Visitors will see launching pads, rocket storage structures, long range tracking radars, weather towers, block-houses, rocket assembly shops, actual launch vehicles and other related range facilities.

At the Main Base movies concerning Wallops Station and NASA will be shown and a wide variety of exhibits are planned. Ample parking space is available. Four large bay areas of a hangar building will be filled with space science and related exhibits. These displays will be both static and animated. They will include examples of electronics equipment used at Wallops in closed circuit television, accurate timing, visual and sound recording, precision machine works, and computer operations. The Range Control Center will simulate an actual rocket launch at regularly scheduled intervals during the day. In addition, many general educational exhibits are planned. Wallops personnel will be on hand to answer questions that you may have concerning our operations.

The tour may begin either at the Wallops Island Launch Site or the Main Base. Information and instruction books are available at the entrance to both areas. Cameras are permitted.

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# NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

WALLOPS STATION, WALLOPS ISLAND, VIRGINIA 23337

TELEPHONE: VALLEY 4-3411 - EXTS. 584 and 579

FOR RELEASE: MONDAY, MARCH 17, 1969

Release No. 69-7

## WALLOPS COMPLETES SUCCESSFUL

### AIR RECOVERY

In mid-air over the Atlantic Ocean Friday, March 14, NASA's Wallops Station recovered a rocket-launched parachute and payload with a fixed-wing Cessna 206 aircraft. This was the third such recovery for the Station (one with a helicopter and two with fixed-wing aircraft). On November 9, 1966, Wallops scored a first in aerial recovery when a payload launched on an Argentina Orion II sounding rocket was air snatched by helicopter.

Friday's payload was launched on a two-stage Sidewinder-Arcas meteorological sounding rocket at 2:05 p.m. for NASA's Langley Research Center, Hampton, Virginia. The objectives of this flight are to investigate the flight performance of the Sidewinder-Arcas rocket system and to demonstrate deployment of the 16-ft diameter, disc-gap-band, parachute at high altitude. Recovery of the parachute and payload is desirable in order to completely evaluate the structural integrity of

-more-

the parachute. Since the payload and parachute do not contain a floatation system or a recovery beacon, it is necessary to recover the payload during descent.

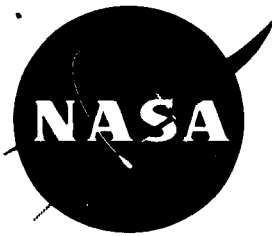
The 7-pound payload was ejected at an apogee of about 400,000 ft. and the 16-ft. parachute deployed immediately as programmed. Using radars at Wallops, the fixed-wing aircraft was vectored to an intercept position.

The package was snared in mid-air about 6500 feet above the surface of the ocean. The operation occurred at T-plus 79 minutes and 92 miles offshore from Wallops Island. Two hours after recovery, the package was landed safely at Wallops Station for further evaluation.

The technique used to accomplish this mission was developed by engineers and technicians at Wallops. The recovery equipment was designed and built by the All American Engineering Company of Wilmington, Delaware. NASA Lewis Research Center's C-47 aircraft was used as the search plane for the operation.

NASA Wallops Station's Robert T. Long was Recovery Director and Gene E. Godwin was Assistant Recovery Directory for this project. James C. Manning was NASA Langley Research Center's Vehicle and Payload Manager. The Lewis Research Center's search aircraft flight crew was Bill Swan and George Ford. The All American flight crew was Joe Barkley and Joe Clauser.

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# NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

WALLOPS STATION, WALLOPS ISLAND, VIRGINIA 23337

TELEPHONE: VALLEY 4-3411 - EXTS. 584 and 579

FOR RELEASE: THURSDAY, MARCH 20, 1969

Release No. 69-8

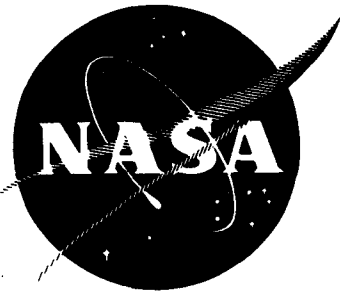
## WALLOPS EXTENDS ENGINEERING SUPPORT CONTRACT

The National Aeronautics and Space Administration has announced that negotiations have been completed to extend to the end of 1969 the existing contract with Philco-Ford Corp., Education and Technical Services Division, 515 Pennsylvania Avenue, Fort Washington, Pennsylvania, under which engineering support and related services are provided at the Wallops Island, Virginia, launch site.

Estimated cost of the one-year extension, cost-plus-fixed fee contract is \$513,293.00.

The company will provide engineering support in the areas of data analysis and computation, experimental facilities systems, range safety systems, instrumentation development, and reliability and quality assurance. The work will be similar to that which the company has provided for the Wallops facility since 1967.

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# NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Wallops Station, Wallops Island, Virginia 23337

TELEPHONE: VALLEY 4-3411 - EXTS. 584 and 579

FOR RELEASE: May 2, 1969

Release No. 69-9

## BLACK BRANT IIIB ROCKET LAUNCHINGS

A more powerful Black Brant IIIB rocket, built by Bristol Aerospace of Winnipeg, was launched yesterday at 2:26 p.m. EDT by NASA at the Wallops Island, Virginia launch site. <sup>(May 1)</sup>

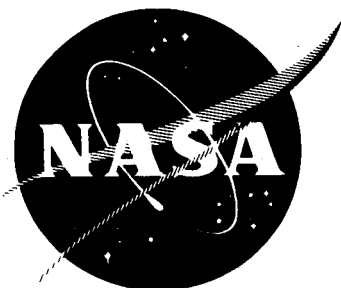
The Canadian rocket, using a higher impulse solid propellant, carried a 112-pound payload to an altitude of about 135 miles. The present Black Brant III is capable of carrying an 88-pound payload to 114 miles.

Two of these uprated rockets were scheduled to be fired from Wallops Island for vehicle testing. The first was successfully launched at 1:57 p.m. on February 28.

NASA contracted with the company to modify the existing Black Brant III for a more powerful propellant to enable the rocket to reach altitudes in excess of 200 kilometers with nominal scientific payload experiment weights.

Ralph Bullock was the Bristol Aerospace Project Manager, Arthur A. Rudmann was the NASA Goddard Space Flight Center's Vehicle Manager, and Roger L. Navarro and Robert S. Nock were the NASA Wallops Island Project Engineers.

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Release No. 69-10

# NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Wallops Station, Wallops Island, Virginia 23337  
Telephone: Valley 4-3411 - Exts. 584 and 579

FOR RELEASE: FRIDAY, MAY 16, 1969

## Wallops Launches Rats in Artificial Gravity Experiment

The National Aeronautics and Space Administration has successfully launched the last in a series of four Aerobee 150-A rockets to study the behavior of white rats in an artificial gravity field.

The 300-pound payload, including two white rats, was launched in a suborbital trajectory over the Atlantic Ocean from Wallops Island, Virginia, at 7:10 p.m. EDT yesterday.

Purpose of the experiment was to determine the feasibility of longer term gravity studies in space. It explores the level of gravity preferred or required by biological organisms in space flight and may provide information useful in the design of space stations.

The Aerobee payload, which reached a peak altitude of about 100 statute miles, provided artificial gravity through centrifugal action in five minutes of free fall.

Two arms of the spinning payload were extended after rocket burn-out, producing a centrifuge with artificial gravity levels between 0.35 and 1.47 g. Exact control of roll rate was achieved by means of a de-spin device.

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The project utilizes the adaptive behavior of animals, allowing them to select their own gravity level by walking along a tunnel runway in the extended arms. When an animal is at the end of the runway nearest the axis or center of rotation, it is exposed to low gravity. Farthest from the center of rotation, the rat experiences a higher gravity level because of the larger radius of rotation.

Each of the two animals determined its own gravity preference level by selecting a position along the runways. Data on the movement and position of the animals was telemetered to ground receiving stations during the flight.

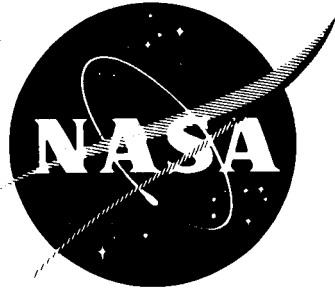
Scientists lack information on the amount of gravity required to assure continuous and efficient functioning of biological systems.

The Aerobee gravity level preference payload was designed and fabricated by engineers and technicians at NASA's Wallops Station, under David F. Detwiler, project manager. William T. Burns was Wallops Station's project engineer. Dr. Norman W. Weissman, chief of NASA's behavioral biology program, is project scientist. The program is managed by Dr. Richard E. Belleville of NASA's Office of Space Science and Applications.

Tests on trained rats indicate a preference for Earth's gravity when exposed to gravity fields of one g and above. The preference for gravity below one g can be measured only in space flight.

-end-





# NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Wallops Station, Wallops Island, Virginia 23337  
TELEPHONE: VALLEY 4-3411 - EXTS. 584 and 579

FOR RELEASE: MAY 22, 1969

Release No. 69-11

## NASA AWARDS CONTRACT FOR SECOND PHASE OF ORBITING FROG OTOLITH (OFO) SPACECRAFT

NASA Wallops Station has selected Space Division of Aerojet-General Corporation of El Monte, California to fabricate and support the launch of two spacecraft for basic research on a frog's balance mechanism (otolith) under weightlessness and repeated acceleration. Total value of the cost-plus-fixed-fee contract is \$1, 676,000.

Under this contract, Aerojet-General will complete the Orbiting Frog Otolith spacecraft, procure the necessary space and ground support hardware, provide two spacecraft and the necessary ground support equipment, conduct a spacecraft and ground support equipment testing program, and provide the necessary mission support both at the launch range and mission control center.

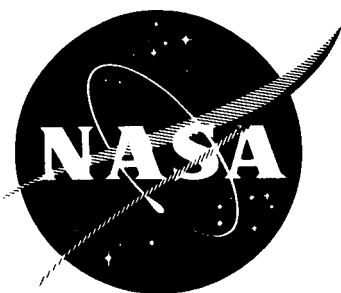
This Orbiting Frog Otolith (OFO) Project is part of a NASA Human Factor Systems Program to investigate the functioning of the primary balance mechanism within the inner ear and to determine what changes will occur under zero "g" conditions.

The research project is managed by Wallops Station for NASA's Office of Advanced Research and Technology; Laurence C. Rossi is the

Project Manager. The Ames Research Center is responsible for the Frog Otolith Experiment Package (FOEP) which was designed by the Johns Hopkins Applied Physics Laboratory.

Principal Investigator is Dr. T. Gualtierotti, head of the Department of Physiology at the University of Milan, Italy.

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Release No. 69-12

# NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Wallops Station, Wallops Island, Virginia 23337

TELEPHONE: VALLEY 4-3411 - EXTS. 584 and 579

FOR RELEASE: THURSDAY, JULY 10, 1969

## Wallops Launches Materials Experiment

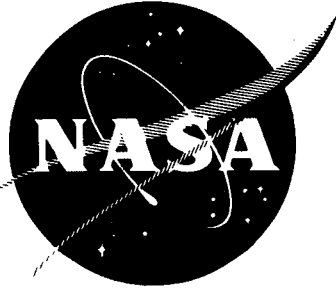
A 4-stage rocket plunged a 58-pound experimental package through the atmosphere at about 7,000 mph today with the primary purpose of seeing how well a layer of carbon phenolic (a synthetic resin) performed as an ablative material.

The ablative process involves the absorbing of heat and its removal in the form of hot liquid or vapors.

The National Aeronautics and Space Administration test was launched at 1:30 p.m. EDT from the NASA Wallops Station here on the coast of Virginia. Peak altitude was near 65,000 feet. The instrumented payload was shaped like a cylinder, rounded at one end. It was 33 inches long with a 10-inch diameter. The rounded end, the nose, was covered with the carbon phenolic.

Three secondary experiments were geared to possible future applications on manned lifting-body entry vehicles. Purpose was to evaluate the performance of three low-density ablative materials attached as lengthwise panels on the outside of the cylinder behind the carbon phenolic nose. The panels were of a pyronne foam, a polymer blend, and a phenolic nylon.

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RELEASE No. 69-13

# NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Wallops Station, Wallops Island, Virginia 23337  
TELEPHONE: VALLEY 4-3411 - EXTS. 584 and 579

FOR RELEASE: MONDAY P.M., JULY 28, 1969

## BALLOON FLIGHTS PLANNED

A series of four 175-foot diameter research balloons carrying scientific experiments will be launched from the National Aeronautics and Space Administration's Wallops Station, Virginia, between July 29 and August 15. Specific flight dates depend on weather and cloud conditions.

Two of the large helium-filled balloons will carry experiments managed by the Langley Research Center, Hampton, Virginia. The prime experiment is a parachute recovery system applicable to payloads returning from space. It is designed for aerial retrieval by airplane or helicopter. The secondary NASA experiment is an Earth Resources photography package consisting of four cameras with various films and filters. It will be recovered from the Atlantic Ocean by surface recovery forces.

Two other balloons will carry an experimental balloon tracking system developed by scientists of the Air Force Cambridge Research Laboratories (AFCRL), Bedford, Massachusetts. All four balloons will be launched by a team of AFCRL balloon technicians.

-more-

After an initial easterly ascent carrying the balloons out over the Atlantic Ocean, all four balloons will reach a maximum altitude of 90,000 feet. The AFCRL balloons will remain at that altitude and will be transported westward by prevailing winds at that level for recovery in New Mexico about three days after launch.

The prime experiment on each NASA balloon will be released at the 90,000 foot level and will fall free to 60,000 feet where a drogue parachute will open. The main payload parachute will follow, with full deployment at 50,000 feet. A smoke generator to aid aerial recovery will begin operating about 20,000 feet and aerial recovery is expected about 10,000 feet altitude some 20 minutes after the payload is released from the balloon.

After prime experiment recovery, helium will be released from the NASA balloons by ground command to lower them into a region where lower altitude winds will again carry the NASA balloons over the ocean where the second payload will be parachuted into the water for surface recovery.

Photographs from the Earth Resources camera experiment will be made as the balloons drift across the Delmarva peninsula and the eastern Chesapeake. The pictures will be used to study sediment transport from lagoons and along the coastline, and to observe the effects of tidal action on such transport. The balloons provide a stable platform from which to observe the slowly developing turbid

patterns associated with coastal phenomena. High altitude photographs are expected to cover an area of some 400 square miles.

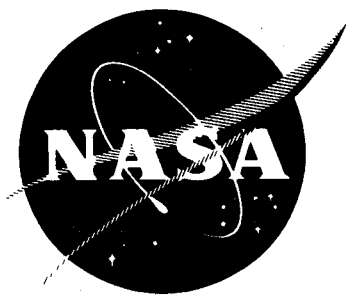
The AFCRL balloon packages are designed to test an experimental balloon location and tracking system using existing navigation aids provided in the nation's VHF omnidirectional range (VOR) system. VOR ground transmitters operated by the Federal Aviation Administration for aircraft navigation cover the entire United States and the balloon flights will be conducted in accordance with FAA regulations.

The AFCRL system consists of a conventional VOR receiver, a decoder, and a balloon-borne transmitter to send the VOR data on the balloon's location to ground receiving stations.

All four balloons will have a capacity of 2,000,000 cubic feet. They will be tracked and controlled by NASA and AFCRL personnel.

Aerial retrieval of the Langley experimental recovery systems package will be done by a team from the Air Force Aerial Recovery and Rescue Service, Hamilton Air Force Base, California. Water recovery of the Earth Resources cameras and instruments will be by the Wallops Station Recovery Team.

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# NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Wallops Station, Wallops Island, Virginia 23337

TELEPHONE: VALLEY 4-3411 - EXTS. 584 and 579

FOR RELEASE: TUESDAY, JULY 29, 1969

Release No. 69-14

## NASA AWARDS CONTRACT TO RICE UNIVERSITY

### FOR SOUNDING ROCKET PAYLOADS

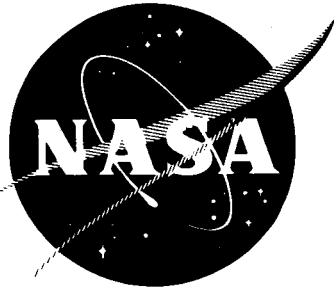
Wallops Station, Wallops Island, Virginia, has awarded to the Rice University, Houston, Texas, a \$936,311 contract to conduct an investigation into the relationship between field aligned currents and auroral particle fluxes and prepare a report which documents and summarizes the findings and conclusions of the entire effort.

The 40-months award is a new non-competitive contract and the work will be performed in Houston.

Under the agreement Rice University will provide the necessary personnel, services, material (other than that to be furnished by the Government) and facilities to provide scientific experiments for use with three Nike-Tomahawk sounding rocket flights. The investigation includes: (1) design construction and test of suitable flight and ground instrumentation for three sounding rocket payloads; (2) preparation and pre-flight testing of the payloads and participation in the three sounding rocket flights; and (3) acquiring, recording, reducing, analyzing and publishing the resulting magnetic and auroral particle data.

Under NASA's Sounding Rocket Program, the Nike-Tomahawk rockets will be launched at the Fort Churchill, Canada, Research Range.

-End-



# NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Wallops Station, Wallops Island, Virginia 23337  
Telephone: Valley 4-3411 - Exts. 584 and 579

FOR RELEASE: TUESDAY, SEPTEMBER 30, 1969

Release No. 69-15

## Wallops Associate Director to Represent UN in Argentina

Mr. A. D. Spinak, Associate Director of Wallops Station, will visit Argentina, October 1 through 12 as the U. S. representative in an international advisory group. In addition to the United States, six other countries will be represented. They are: Brazil, France, India, Italy, Russia, and the United Kingdom.

The group was appointed by the Secretary General of the UN for the purpose of advising the Committee on the Peaceful Uses of Outer Space with regard to the sponsorship by the United Nations of the Argentine Mar Chiquita rocket launching facility near the town of Mar Del Plata.

Wallops Station plays a very active role in NASA's program of international cooperation in space research. More than 50 countries have sent visitors to observe operations and procedures. Wallops has assisted 17 countries with training of personnel, activation of their launch sites, or launching their experiments.

Two groups of Argentine personnel participated in training programs at Wallops, in 1964 and 1965. A Wallops employee was on

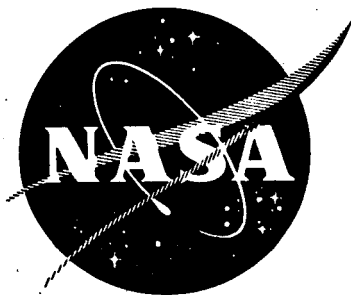
-more-



hand at the Chamical range for Argentina's first sounding rocket launch in December 1964. In 1966 Argentina's Orion II sounding rocket was successfully flight tested in two of three attempts at Wallops Island, Virginia. Argentina is also actively involved in the EXAMETNET (Experimental Inter-American Meteorological Rocket Network) with Wallops and Brazil space personnel.

Mr. Spinak and his family reside in Pocomoke City, Maryland, and he has been employed at NASA Wallops Island, Virginia, since 1949.

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# NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

WALLOPS STATION, WALLOPS ISLAND, VIRGINIA 23337  
TELEPHONE: VALLEY 4-3411 - EXTS. 584 and 579

FOR RELEASE: MONDAY, OCTOBER 6, 1969

## COSMIC X-RAY EXPERIMENT CONDUCTED FROM WALLOPS

An experiment to measure cosmic X-ray emissions was launched by the National Aeronautics and Space Administration at Wallops Island, Virginia at 1:15 a.m. Saturday, October 4.

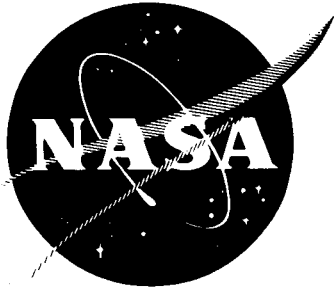
A two-stage Nike-Tomahawk sounding rocket carried the 223-pound payload to an altitude of approximately 146 statute miles.

Purpose of the experiment was to measure X-ray emissions from outer space (the regions between galaxies) and to measure the amount of the gas in our own galaxy.

The results are expected to yield new information useful to scientists studying the problems of the formation of galaxies.

Dr. G. Garmire of the California Institute of Technology was the Project Scientist and Mr. R. G. Plihal of NASA's Goddard Space Flight Center was the Vehicle Manager. The Wallops Project Engineer was Mr. Earl B. Jackson.

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Release No. 69-16

# NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

WALLOPS STATION, WALLOPS ISLAND, VIRGINIA 23337

TELEPHONE: VALLEY 4-3411 - EXTS. 584 and 579

FOR RELEASE: MONDAY, OCTOBER 13, 1969

## WALLOPS HOSTS

### METEOROLOGICAL WORKING GROUP

The Meteorological Working Group of the Inter-Range Instrumentation Group (IRIG) will hold its autumn meeting this week, October 13-16, at NASA's Wallops Island, Virginia, Station. The Wallops Station as host member will sponsor this twenty-eighth semi-annual meeting of the Group, which is composed of officers and civilians of the Air Force, Navy, Army, and government agencies. Expected to attend are some fifty members, associates, and guests, including a representative of the Canadian Forces.

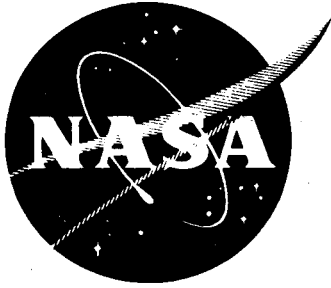
Since its formation in 1956, the Meteorological Working Group has been instrumental in the inauguration of compatible measuring systems on the various test ranges. It pioneered in establishing the present meteorological rocket network, which was born in 1960 under the Group's sponsorship on the national and service rocket and missile test ranges, and which now provides soundings of the atmosphere to heights of forty-five miles.

- more -

The Group will tour the facilities of the Wallops Station this afternoon and will hold its banquet tonight. The guest speaker will be Mr. Harry Press of NASA Goddard Space Flight Center.

The Chairman of the Meteorological Working Group is Mr. Norman J. Asbridge of the Air Force Western Test Range, California. Members representing the Wallops Station and hosting this meeting are Mr. John F. Spurling, Head, Meteorological Projects and Systems of the Range Engineering Division and Mr. William H. Hilliard, Head, Management Services of the Administrative Management Division.

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Release no. 69-17

# NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

WALLOPS STATION, WALLOPS ISLAND, VIRGINIA 23337  
TELEPHONE: VALLEY 4-3411 - EXTS. 584 and 579

FOR RELEASE: THURSDAY, OCTOBER 16, 1969

## WALLOPS LAUNCHES 5½-TON ASTROBEE

### SOUNDING ROCKET

At 6:43 p.m. EDT Wednesday, the National Aeronautics and Space Administration launched its most powerful sounding rocket from Wallops Island, Virginia. This was the fifth launch of the Astrobee 1500, a 11,600 pound solid-fuel rocket.

The 32-foot Astrobee carried a 102-pound payload containing experiments of NASA's Goddard Space Flight Center and instruments for performance testing of the vehicle. The rocket attained a peak altitude of 1390 nautical miles and approximately 35 minutes of data were transmitted to ground stations during the flight. Recovery was not required.

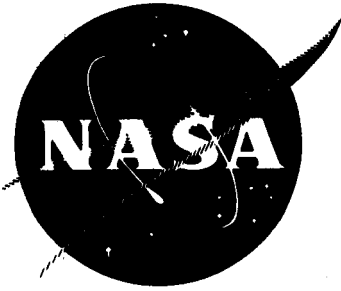
The primary objectives of this flight were two fold: first, to obtain measurements of cosmic radio noise intensities, and second, continue the evaluation of the Astrobee 1500 performance and verify the new Alcor 1B second stage. A secondary scientific objective was to test the receiver system for the orbiting Radio Astronomy Explorer (RAE) Satellite.

- more -

The Astrobee 1500 is being developed by NASA to provide a research rocket capable of carrying heavy scientific payloads to high altitudes, with a relative ease-of-handling offered by a solid-propellant vehicle of any two stages. Its first stage has a sea-level thrust of 57,000 pounds, its second stage, 11,000. The rocket is designed to boost payloads of from 75 to 300 pounds to altitudes ranging from 750 to over 1600 miles above the earth.

Project Scientist for this launch was Mr. Richard R. Weber and Project Manager was Herbert J. Honecker, Jr., both of the Goddard Space Flight Center. Wallops Project Engineer was Dempsey B. Bruton, Jr.

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# NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Wallops Station, Wallops Island, Virginia 23337

TELEPHONE: VALLEY 4-3411 - EXTS. 584 and 579

FOR RELEASE: SATURDAY, NOVEMBER 9, 1969

Release No. 69-18

## ASTRONOMY EXPERIMENT LAUNCHED AT WALLOPS ISLAND

A rocket-borne telescope instrumented for infra-red astronomy by scientists from the U. S. Naval Research Laboratory was launched at the NASA Wallops Island, Virginia, facility this morning at 2:49 a.m. EST. The 17-inch diameter solid-propellant Black Brant VB rocket was produced by Bristol Aerospace Limited of Canada and is capable of lifting a 450-pound payload to an altitude of 175 miles. Payload recovery operations were completed at 9:47 a.m. EST.

A unique engineering feature of the telescope was the cooling of the entire unit to the temperature of boiling liquid helium ( $-450^{\circ}\text{F}$ ). The extremely cold temperatures were required to keep radiation from the telescope itself from interfering with the measurements. The telescope before launch resembled a double-walled vacuum bottle with about 16 quarts of liquid helium within its walls.

The telescope contained photoelectric detectors sensitive to optical radiation in the spectral region between visible light and microwaves where heat rays, emitted by the atmosphere mask celestial sources.

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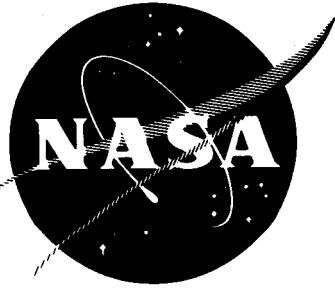
Previous experiments indicate that one detector sensitive to the 0.3 to 1.5 millimeter wavelength band observed cosmic radiation which may have originated at the beginning of the universe ten billion years ago. Other detectors observed star-like sources of infra-red rays in the 10 to 300 micron band.

Preliminary measurements from infra-red rocket and balloon-borne telescopes carried out by NRL, Cornell University, and Goddard Institute for Space Studies indicate that within our galaxy and possibly in distant galaxies, there is a large amount of radiation in the infra-red as compared to the visible and radio regions of the spectrum. It is hoped that results from this launch and subsequent flights will make it possible to better understand the processes involved with this excess energy content.

Dr. Douglas P. McNutt is the Project Scientist and Eddie L. Wilder is the Project Manager for NRL. David Griffeths is the Project Engineer for Bristol Aerospace Ltd. of Canada and Earl B. Jackson is the Project Engineer for Wallops.

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# NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

WALLOPS STATION, WALLOPS ISLAND, VIRGINIA 23337  
TELEPHONE: VALLEY 4-3411 - EXTS. 584 and 579

FOR RELEASE: FRIDAY, DECEMBER 5, 1969

RELEASE NO. 69-19

## CHEMICAL CLOUDS TO BE VISIBLE

### ALONG EAST COAST

Weather conditions permitting, huge glowing, colored clouds will be formed high over the mid-eastern coast from sunset Monday, December 8, to dawn the following morning.

The National Aeronautics and Space Administration plans to launch a series of seven rocketborne chemical vapor trail experiments from Wallops Island, Virginia, Station for meteorological research in the upper atmosphere. The prime objective of the experiments is to measure wind directions and speeds through a region from around 25 statute miles up to 135 miles and the temporal variations which occur throughout the night.

The first firing of the series is scheduled for about 5:15 p.m. EST. A two-stage Nike-Apache sounding rocket is programmed to spew-out a trail of sodium vapor from about 25 to 135 miles altitude. The vapor will be wind-formed into an orange-pink cloud easily visible to the naked eye hundreds of miles from the launch site. The first launch will be followed by five trimethylaluminum (TMA) experiments launched on Nike-Apache rockets at about two-hour intervals to create vapor trails up to about 100 miles. These trails will disperse into greenish-blue clouds. The

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last firing, also on a Nike-Apache, is scheduled for about 6:20 a.m. Tuesday, to form a sodium cloud in the same general altitude region as the previous experiments.

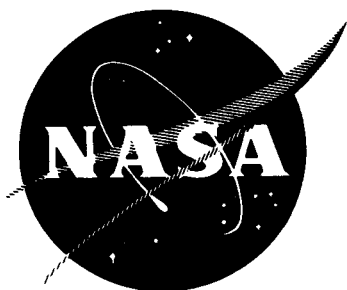
The vapor trail dispersions are recorded by cameras on the ground. The sodium vapor, which glows from the sun's radiations, is employed for the photographic observations in twilight periods. TMA, which emits a much duller glow, is more suited to nighttime observations.

In conjunction with the vapor series, two acoustic grenade experiments will be conducted after the vapor cloud series. The scientific payloads, also on Nike-Apache vehicles, will be programmed to eject and detonate the special explosive charges at intervals ranging between 30 and 75 statute miles altitude. Correlative data of atmospheric conditions in the same altitude region are obtained from these experiments by recording the time and location of each detonation with the use of telemetry and radar, measuring the time lapse and direction of sound arrival on arrays of sensitive microphones located near the launch site.

A meteorological support Arcas will follow the last grenade launch.

These experiments are part of the Meteorological Sounding Rocket Program carried on by the NASA Goddard Space Flight Center, Greenbelt, Maryland. J. F. Bedinger of the GCA Corporation, under contract to Goddard, is the Project Director for the series, with W. S. Smith of Goddard, the Project Scientist. Overall direction of the program is under the NASA Office of Space Science and Applications. Project Engineers for the Wallops launch operations are E. Benjamin Jackson and Dempsey B. Bruton, Jr.

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RELEASE NO. 69-20

# NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

WALLOPS STATION, WALLOPS ISLAND, VIRGINIA 23337  
TELEPHONE: VALLEY 4-3411 - EXTS. 584 and 579

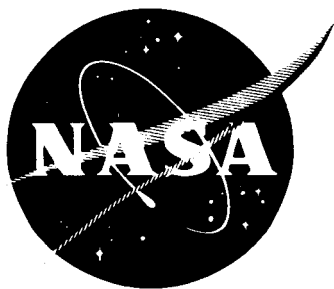
FOR RELEASE: SUNDAY A.M., DECEMBER 14, 1969

## TWO CHEMICAL CLOUD EXPERIMENTS

### LAUNCHED AT WALLOPS

Two chemical vapor cloud experiments were launched from Wallops Island yesterday. A reddish-orange cloud, visible for hundreds of miles, was formed by sodium vapor from a rocket payload launched at sunset, 5:22 p.m., and a bluish white cloud was formed from another chemical, trimethylaluminum (TMA), ejected from a rocket launched at 7:30 p.m. This second cloud was not easily visible. The additional eight rockets scheduled in this all-night meteorological series were postponed because of cloud cover at the camera sites and will be re-scheduled at a later date. Reports of sightings of the first sodium cloud were received from Washington, D. C.; Allentown, Pennsylvania; Springfield, Massachusetts; Providence, Rhode Island; and Concord, New Hampshire.

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# NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

WALLOPS STATION, WALLOPS ISLAND, VIRGINIA 23337  
TELEPHONE: VALLEY 4-3411 - EXTS. 584 and 579

FOR RELEASE: IN ALASKA, DECEMBER 30, 1969

## SIX ROCKET EXPERIMENTS SCHEDULED

### AT POINT BARROW

In January the National Aeronautics and Space Administration will begin a series of rocket-launched acoustic grenade experiments at Point Barrow, Alaska, to obtain upper atmospheric meteorological data within the Arctic Circle.

The six Nike-Cajun research rockets are scheduled to be launched between January 5 and February 10, 1970. These experiments will be coordinated with similar launchings at the Churchill Research Range in Canada and the NASA Wallops Station, Wallops Island, Virginia.

Tentatively scheduled for launch during a four-week period, the six experiments may be launched within a week if the "winter anomaly" (warming trend of the upper atmosphere) occurs. If delayed by weather conditions or the difficulties of coordinating with the other ranges, they will be rescheduled from day to day through February 10.

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# NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Wallops Station, Wallops Island, Virginia 23337  
TELEPHONE: VALLEY 4-3411 - EXTS. 584 and 579

FOR RELEASE: WEDNESDAY, JANUARY 14, 1970

Release No. 70-1

## WALLOPS LAUNCHES A SERIES OF 11 METEOROLOGICAL EXPERIMENTS

The National Aeronautics and Space Administration conducted seven chemical cloud experiments between sunset last night and dawn today from its Wallops Island, Virginia, Station.

Liftoff times were 5:36 p.m., 8:10 p.m., 10:00 p.m., 12:00 midnight, 2:17 a.m., 4:15 a.m., and 6:35 a.m.

Two different chemicals -- sodium and trimethylaluminum (TMA)-- were used in this series, to continue the study of wind structure in the upper atmosphere through a region from around 25 statute miles up to 135 miles. Data on wind conditions were obtained by photographing the motion of the trails from five camera sites within a 100-mile radius of Wallops Island. Similar tests were conducted here last February. The dusk firing was unsuccessful as the second stage did not ignite. Failure to ignite was attributed to a faulty second-stage igniter.

The dawn sodium vapor experiment generated a reddish-orange cloud visible for hundreds of miles along the East Coast. Reports of sightings were received from Cape Hatteras, North Carolina; Washington, D.C.; and Fort Wayne, Indiana.

Five payloads consisted of trimethylaluminum (TMA) which formed pale white clouds, less visible than the sodium. Six of these experi-

-more-

ments were lofted on two-stage Nike-Apache sounding rockets and one was carried on a Nike-Cajun (first TMA at 8:10 p.m.)

In conjunction with the vapor series, three acoustic grenade experiments were conducted after the vapor series. These scientific payloads, also on Nike-Apache and Nike-Cajun vehicles, were programmed to eject and detonate the special explosive charges at intervals ranging between 30 and 75 statute miles altitude. Correlative data of atmospheric conditions in the same altitude region are obtained from these experiments by recording the time and location of each detonation with the use of telemetry and radar, measuring the time lapse and direction of sound arrival on arrays of sensitive microphones located near the launch site. The last two grenade experiments were delayed because of payload telemetry transmitter problems and sounding ranging interference. Liftoff times were 6:47 a.m., 12:23 p.m., and 12:55 p.m.

A meteorological single-stage Arcas rocket followed at 1:27 p.m. to collect additional data for the series.

These experiments are part of the Meteorological Sounding Rocket Program carried on by the NASA Goddard Space Flight Center, Greenbelt, Maryland. J. F. Bedinger of the GCA Corporation was the Project Director for the chemical series, and Frank Casey of Globe Universal Sciences, Inc. was Mission Controller, both under contract to Goddard. W. S. Smith of Goddard was the Project Scientist. Overall direction of the program is under the NASA Office of Space Science and Applications. Project Engineers for the Wallops launch operations were E. Benjamin Jackson, Carole Clear, and Brooks Shaw.

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# NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Wallops Station, Wallops Island, Virginia 23337  
TELEPHONE: VALLEY 4-3411 - EXTS. 584 and 579

FOR RELEASE: THURSDAY, FEBRUARY 5, 1970

Release No. 70-2

## NEW SOUNDING ROCKET CONFIGURATION

### TESTED AT WALLOPS

The National Aeronautics and Space Administration today conducted the second launch of an Aerobee 170, a new sounding rocket configuration consisting of a liquid-fuel Aerobee 150 sustainer and a solid-fuel Nike booster. The 41-foot rocket launched at 10:51 A.M. EST today from NASA Wallops Island, on Virginia's Eastern Shore, carried 211 pounds of instrumentation to test and qualify a large number of rocket, recovery and instrumentation systems and components.

The first flight test of this rocket was successfully conducted from White Sands, New Mexico, in October 1968 for a dual-purpose engineering-space science mission.

The objectives of this multi-purpose flight are: (1) flight test the first Aerobee 170 production vehicle, (2) flight test a new water recovery system and conduct a water recovery operation using the same techniques and system that will be used for the Aerobee 170 during the Eclipse on March 7, and (3) flight qualify a whole variety of new telemetry instrumentation.

Recovery operations were under the general direction of Wallops Stations personnel assisted by the Coast Guard Cutter Alert and a long

- more -

range helicopter from Cape May, New Jersey, Navy UDT divers, and involved recovery of the Aerobee sustainer as well as the payload.

The Goddard Project Scientists are Jon R. Busse and R. Morgan Windsor, and the Goddard Vehicle Coordinator is R. Wayne McIntyre. The Wallops Test Director is William L. Lord and the Wallops Project Engineer is Roger L. Navarro. Robert T. Long is the Wallops Recovery Operations Director.

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# NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Wallops Station, Wallops Island, Virginia 23337

TELEPHONE: VALLEY 4-3411 - EXTS. 584 and 579

FOR RELEASE: 3:00 P.M., MARCH 5, 1970

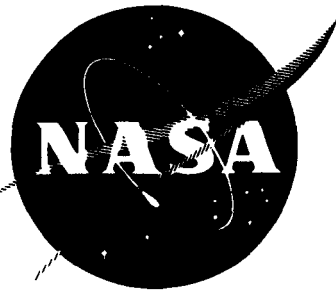
Release No. 70-3

The National Aeronautics and Space Administration has selected the General Electric Company, Newport News, Virginia, and Computer Sciences Corporation, Falls Church, Virginia, for competitive negotiations leading to a contract to provide engineering and technical services at NASA's Wallops Station, Wallops Island, Virginia.

Work under the cost-plus-fixed-fee contract with an estimated value in excess of \$400,000 is to be performed through March 1971.

Services under this contract include engineering support of data analysis and computation, experimental facilities systems, range safety systems, instrumentation development and reliability and quality assurance. The contract will be administered by Wallops Station under the direction of NASA's Office of Tracking and Data Acquisition.

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Release No. 70-4

# NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Wallops Station, Wallops Island, Virginia 23337

TELEPHONE: VALLEY 4-3411 - EXTS. 584 and 579

FOR RELEASE: SUNDAY, MARCH 15, 1970

## SOLAR ECLIPSE DATA STUDIED

Scientists are studying the largest amount of data ever gathered on a solar eclipse from rocketborne experiments after the sounding rocket "barrage" from Wallops Island, March 6-8.

It will be several months before most of the scientific information gathered from the sounding rockets as well as ground and spacecraft observations will be analyzed. Scientists are especially interested in comparing data from ground observations with those from sounding rocket and satellite measurements.

The photographic data obtained by the Harvard/Imperial College Scientific team from their ultra-violet flash spectrum experiment has been developed and appears to be of unprecedented quality. These results also indicate that the complex solar-crescent pointing control developed for this expedition performed perfectly holding the experiment trained on the sun to within two arc seconds.

A total of 31 sounding rockets were launched from Wallops in the National Aeronautics and Space Administration's 1970

-more-

Eclipse Program. All 31 rockets were launched on time to the second. All vehicles performed perfectly. Excellent radar traces and telemetry records were received on all of the flights.

Only one, an ozone and water vapor experiment aboard a Nike-Cajun, failed to return any scientific data. Three other experiments are partial successes since they did not return all the scientific data expected.

These three experiments are: the solar flash spectrum experiment carried on an Aerobee 170; an airglow experiment carried on a Nike-Tomahawk; and a Pitot probe carried on a Nike-Apache.

Of the three supporting rocket launches from the White Sands, New Mexico, missile range, two experiments were completely successful and recovered. The third was recovered but the pointing control system had been unable to train the experiment on the sun.

NASA-sponsored ground observations of the eclipse all had ideal viewing conditions at two sites in Virginia and one in Mexico. Five experimenters at Langley Research Center and Sandbridge, Virginia and two investigators at

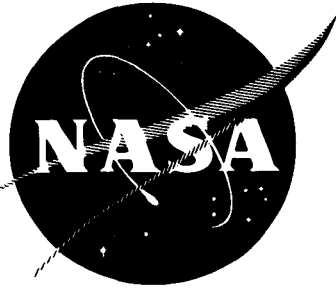
Miahuatlan, Mexico, reported that their instrumentation worked well and that good data were obtained.

Applications Technology Satellite 3 photographed the shadow of the eclipse as it crossed the eastern United States (NASA photograph 70-H-357).

Despite a period of transmitting failure at the Goldstone, California tracking station, the solar eclipse radio experiment the Mariner 6 spacecraft was probably more than 90% successful, according to the Jet Propulsion Laboratory and California Institute of Technology experimenters. Two measurements of the radio signal from the spacecraft were made prior to the difficulty and ten more were made after the record 235 million miles communications link was restored. The measurements will be coordinated with those made by the ATS-1 satellite and observations of many solar observers.

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# NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Wallops Station, Wallops Island, Virginia 23337  
TELEPHONE: VALLEY 4-3411 - EXTS. 584 and 579

FOR RELEASE: FRIDAY, 12:00 NOON  
March 27, 1970

Release No. 70-5

## SOLAR ECLIPSE DATA RECOVERED MILE BELOW SEA

Scientific data on the March 7 Solar Eclipse collected by a rocket 108 miles above the earth has been recovered from 5850 feet under the sea.

Four cameras in the Naval Research Laboratory experiment photographed the solar flash spectrum in the chromosphere of the eclipsed sun. The parachute failed, however, and the payload sank some 75 miles off the Wallops Island, Virginia, launch site, crushed by the impact and a pressure of some 3,000 pounds per square inch at the more than 1 mile depth.

The payload was recovered by a U. S. Navy unmanned recovery vehicle and the water-soaked film was maintained at its 35 degree fahrenheit temperature while special processing techniques were devised.

The principal NRL investigator, Dr. G. E. Brueckner, said today that with the special processing, he has retrieved those photographs which contain the prime ultra violet spectrum at the time of totality of the eclipse.

- more -

Since all but one of the experiments on the Aerobee 170 was based on photography, recovery of the payload was a prime requisite and Dr. Brueckner said he now considers the experiment a success.

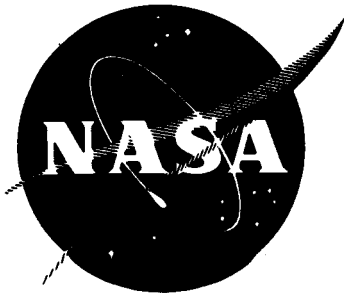
The instrument package was located 1200 feet from its predicted impact point on March 22.

Retrieval was accomplished by the Navy's cable-controlled underwater recovery vehicle (CURV III) operated from the USS Opportune ARS-41. CURV is the latest in a new family of unmanned remote-controlled underwater recovery vehicles capable of operating to a depth of 7,000 feet. It is equipped with sonar, strobe lights, TV cameras and a claw. The USS Opportune under the command of Lieutenant Commander Don C. Craft is a salvage ship in the U. S. Atlantic Fleet.

At 5:15 a.m, March 22, the instrumented package was successfully hooked by CURV III. A careful and slow ascent brought it to the surface at about 11:30 a.m. and it was taken aboard the Opportune two hours later for transportation into Norfolk.

Liftoff of the NRL solar flash spectrum experiment aboard an Aerobee 170 occurred at 1:35 p.m. EST on Saturday, March 7.

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# NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Wallops Station, Wallops Island, Virginia 23337  
TELEPHONE: VALLEY 4-3411 - EXTS. 584 and 579

FOR RELEASE: FRIDAY, APRIL 3, 1970

Release No. 70-6

## MOON ROCK TO BE ON DISPLAY AT WALLOPS

The public is cordially invited to visit NASA Wallops Station on Saturday and Sunday, April 18 and 19, from 10:00 a.m. until 4:30 p.m. Individuals may set their own time limit and visit all of the exhibits or only those they select.

This is a joint event of federal activities in the area including Assateague National Seashore Park, Chincoteague Coast Guard Station, Chincoteague National Wildlife Refuge, ESSA (Environmental Science Services Administration) at Wallops, and NASA Wallops Station. All of these agencies are planning special exhibits and/or tours at their respective facilities.

Facilities at Wallops Main Base and the rocket launching sites on Wallops Island will be open. The Main Base and Wallops Island are approximately 10 miles apart. A tour of both areas will require one to two hours.

The Wallops Island part of the tour will be a self-guided "do-it-yourself" riding tour in your own private car. Descriptive literature will be provided to point out items of interest as you ride by. Visitors will see launching pads, rocket storage structures, long range tracking

- more -

radars, weather towers, blockhouses, rocket assembly shops and other related range facilities.

At the Main Base movies concerning Wallops Station and NASA will be shown and some space science exhibits will be displayed. Ample parking space is available. One large bay area in a hangar building will be filled with space science and related exhibits. These displays will be both static and animated. They will include a Lunar Sample Exhibit containing material brought by the Apollo astronauts from the lunar surface to earth last summer. Wallops personnel will be on hand to answer questions that you may have concerning our operations.

The tour may begin either at the Wallops Island Launch Site or the Main Base. Information and instruction books are available at the entrance to both areas. Cameras are permitted.

ESSA's weather satellite readout station will also be open to visitors and is located on the Wallops Main Base on the Chincoteague road.

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# NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

WALLOPS STATION, WALLOPS ISLAND, VIRGINIA 23337

TELEPHONE: VALLEY 4-3411 - EXTS. 584 and 579

FOR RELEASE: SUNDAY, JUNE 14, 1970

Release No. 70-7

## "PARASOL-POPPING" EXPERIMENT SET

*Postponed  
6/17/70 11:12*

A "parasol-popping" flight experiment to study the characteristics of a parachute designed to help land instruments on Mars will be rocketed over the Atlantic Ocean by the National Aeronautics and Space Administration no earlier than June 17.

The SPED (for Supersonic Planetary Entry Decelerator) test will be launched from NASA's Wallops Station, Wallops Island, Virginia, by a single-stage Castor rocket with two smaller Recruit rockets attached for additional liftoff thrust.

The parasol is a deployable fabric and metal aeroshell (flattened cone) that opens like an umbrella. Much as a person holds an umbrella low and pointed into a strong wind, this aeroshell will be aimed along the flight path to serve as a decelerator, or aerodynamic brake.

Purpose of the SPED flight is (1) to study the deployment characteristics of a parachute designed to operate in a thin atmosphere in the disturbed wake of a blunt-shaped spacecraft and (2) to verify the new engineering technique (the erectable aero-

-more-

shell) for testing parachutes or other drag devices attached to Simulated Planetary Entry Spacecraft.

After separating from the Castor booster rocket about 45 miles above the Atlantic, the 3,052-pound SPED payload will coast up to about 57 miles before starting to descend. Gyroscopes will allow orientation of the vehicle to the desired reentry attitude on the descending flight path.

At 44 miles altitude, the conical aeroshell, 15 feet in diameter, will be popped open to simulate the Mars entry spacecraft speeding through the thin atmosphere.

When down to 27 miles, with the aeroshell traveling nearly 3,000 feet-per-second, or about 2.7 times the speed of sound, the 55-foot-diameter disk-gap-band parachute will be deployed on ground command.

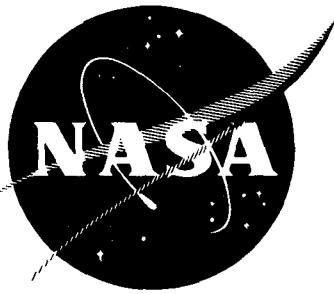
Performance measurements will be recorded by onboard accelerometers, strain gauges, attitude gyros and cameras. Some data will be radioed to the ground during the flight. Radar tracking, aided by a transponder in the payload, will be used.

Soon after full parachute inflation, cameras, test instrumentation and the attached parachute will be released from the aeroshell to descend and be recovered from the ocean's surface by a Wallops helicopter about 70 miles southeast of the launch site. Divers will recover the aeroshell from the ocean floor.

SPED, a project of NASA's Office of Advanced Research and Technology, is managed by the Applied Materials and Physics Division of the NASA Langley Research Center, Hampton, Virginia.

The Langley Project Manager is Reginald R. Lundstrom and the Langley Research Project Engineer is Joseph D. Pride, Jr. The Wallops Recovery Operations Director is Robert T. Long and the Wallops Project Engineer is Robert S. Nock.

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# NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

WALLOPS STATION, WALLOPS ISLAND, VIRGINIA 23337  
TELEPHONE: VALLEY 4-3411 - EXTS. 584 and 579

FOR RELEASE: 3:00 P.M.

THURSDAY, JUNE 11, 1970

Release No. 70-8

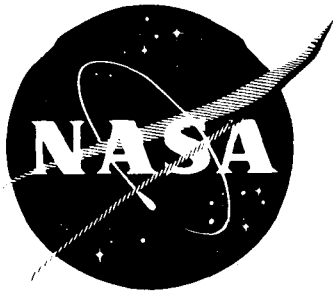
## WALLOPS AWARDS ENGINEERING

### SUPPORT CONTRACT

National Aeronautics and Space Administration has selected Computer Sciences Corporation, Falls Church, Virginia, for award of a cost-plus-fixed-fee contract for approximately \$450,000 for engineering support services at Wallops Station, Wallops Island, Virginia. The contract will be for a period of one year with provisions for two successive one-year extensions.

Services under this new contract include engineering support in the areas of data analysis and computation, experimental facilities systems, range safety systems, instrumentation development, and reliability and quality assurance.

- END -



Release No. 70-9

# NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Wallops Station, Wallops Island, Virginia 23337

TELEPHONE: VALLEY 4-3411 - EXTS. 584 and 579

FOR RELEASE: TUESDAY, August 4, 1970

## SPED FLIGHT FROM WALLOPS RESCHEDULED FOR

~~AUGUST 5~~

Oct 7 ✓

A parasol-popping experiment to study the characteristics of a parachute designed to help land instruments on Mars is scheduled for launch from Wallops Island, Virginia at about 3:15 p.m. EDT tomorrow, August 5.

The rocket-launched SPED (Supersonic Planetary Entry Decelerator), originally planned by the National Aeronautics and Space Administration for June 17, was postponed because of technical and rescheduling problems.

The experiment will be lofted above the Atlantic Ocean by a single-stage Castor rocket with two small Recruit rockets attached for additional thrust.

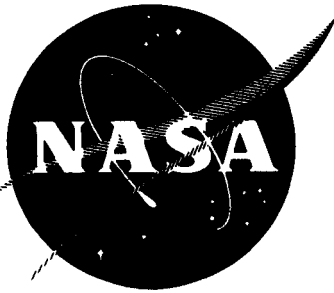
The fabric and metal aeroshell opens inflight like an umbrella, or parasol, to become a flattened cone. This aeroshell will be aimed along the flight path to serve as a decelerator, or aerodynamic brake, much as a person holds an umbrella low and pointed into a strong wind.

After separating from the Castor booster about 45 miles above the ocean, the 3,052-pound SPED payload will coast up to about 57 miles before starting to descend. At 44 miles altitude during descent, the

conical, 15-foot diameter aeroshell will be popped open to simulate a Mars entry spacecraft speeding through the thin atmosphere. When down to 27 miles, with the spacecraft traveling nearly 3,000 feet-per-second (about 2.7 times the speed of sound), the 55-foot-diameter disk-gap-band parachute will be deployed on ground command.

After parachute inflation, the payload containing cameras, test instrumentation and the attached parachute will separate from the aeroshell and descent to the ocean's surface. The payload will be recovered by a Wallops helicopter about 70 miles southeast of the launch site. Divers will recover the aeroshell from the ocean floor. The USS Opportune and USNS Range Recoverer will standby to assist in the recovery operations.

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Release No. 70-10

*add to p309*

# NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Wallops Station, Wallops Island, Virginia 23337  
TELEPHONE: VALLEY 4-3411 - EXTS. 584 and 579

FOR RELEASE: ~~August 25, 1970~~

*September 2, 1970*

## LIFE SCIENTISTS LEARN ABOUT SPACE FLIGHT

A three-week training program, which began August 3, 1970, designed to acquaint a group of 46 life scientists with the engineering aspects of space flight has been successfully concluded at the National Aeronautics and Space Administration, Wallops Station, Friday, August 21.

The program brought together these life scientists from universities, government laboratories and private industry throughout the United States so they could gain a background of knowledge in the engineering and operational procedures necessary in planning and conducting biological experiments in space.

Sponsored jointly by NASA and the University of Virginia, the course, officially called the Bio-Space Technology Training Program, was held for the sixth consecutive year at Wallops Island.

This year's participants were selected by NASA from over 150 applicants with selection made on a competitive basis. To be eligible, applicants were required to be U. S. citizens and have earned at least a baccalaureate degree by July 31 of this year.

- more -

The training program utilized two training techniques: classroom lectures and laboratory exercises.

The classroom phase of the training attempted to familiarize the participants with such areas as telemetry and radar systems, trajectory and orbital considerations, biological requirements in space, data handling and instrumentation, spacecraft and payload design, and propulsion systems. Experts in these fields were brought in from all over the U. S. to give these lectures.

The laboratory phase of the training program involved the launching of five modified ARCAS sounding rockets with live animal payloads. This particular vehicle was redesigned by Wallops engineers especially for the Bio-Space Technology Training Program. The ARCAS, approximately seven feet long, took its payload about 120,000 feet high and about 20 miles out over the Atlantic Ocean from the launch pad at Wallops, just off Virginia's Eastern Shore. Time of each flight, from launch to splashdown, ranged from 20 to 25 minutes, with the payloads floating on a parachute down to the surface of the ocean, after separating from the booster. A helicopter picked up the payloads.

The first two ARCAS launches were for demonstration purposes. They gave the participants some idea of the complexity of launching live specimens into space. The payloads on these flights



were 180 gm. white laboratory rats. Through the use of telemetry the response of the rats to the stress of space flight was measured through the monitoring of his temperature and heart rate.

Under Wallops supervision the other three ARCAS vehicles were turned over to the participants so they could design and prepare biological experiments of their own to fly in space. The participants were divided into three groups, with each group having its own rocket and payload to launch.

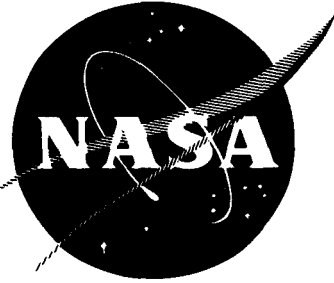
One of the groups sent a hypothermic rat (cooled to 45 degrees F.), sponge cells and bacteria cultures aloft, while another group sent a similar hypothermic rat, and wheat and radish seedlings. The third group sent a young chicken and cultures of Paramecium. All payloads were successfully recovered. The experiments with the hypothermic rats hoped to determine if the shock of liftoff, spin and weightlessness would cause the rats to suddenly leave their cooled-down state. The experiment with the chicken dealt with measuring its breathing and heart position during flight. All other experiments concerned themselves with the effects of space flight on various specimens' growth and cell structure.

The program was managed through the combined efforts of the National Aeronautics and Space Administration and the University of Virginia. Working together, these two organizations pooled

their talents and energies to assure a successful program. The program was directed by Dr. Richard L. Jennings of the University of Virginia.

NASA Wallops Station, while acting as host Installation, provided all necessary classrooms, offices, housing, laboratory, and launch facilities in support of the program. Also, the Wallops technical staff were at the disposal of the students to assist them in the preparations and launching of their experiments. The Wallops staff working in the program were Phil Ryan, project manager, Dr. Emily Holton, the life science manager and Wendell Lee, project engineer.

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# NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Wallops Station, Wallops Island, Virginia 23337  
TELEPHONE: VALLEY 4-3411 - EXTS. 584 and 579

FOR RELEASE: SUNDAY, September 27, 1970

Release No. 70-11

## NASA CLOUD EXPERIMENTS

A huge bright pastel cloud will be visible over much of the eastern half of the United States and Canada just before dawn on two days this week if weather permits.

The National Aeronautics and Space Administration will launch sounding rockets from its Wallops Station, Virginia, facility on September 29 and 30 to conduct scientific experiments with vaporized barium which will form the clouds.

One cloud, scheduled for September 29, will be at an altitude of 560 miles and may expand to 300 miles or more in length. The second, at an altitude of 150 miles, is expected to be cucumber-shaped and expand to about 90 miles long by 20 miles thick.

Data from experiments like these help scientists understand better the electric and magnetic fields in the upper atmosphere. Such knowledge may speed the development of improved techniques for weather forecasting and better radio and television communications.

The first of the experiments is a cooperative project of NASA and the Max Planck Institute (MPI) for Extraterrestrial Physics of West

-more-

Germany. The second is a special test of a new type of barium release mechanism under study by NASA's Langley Research Center, Hampton, Virginia.

The NASA/MPI experiment will be a test of a new release cannister and of newly-designed optical system for tracking barium cloud releases at very high altitudes. The system is designed to accurately record the motions of the ionized barium cloud in space. From a study of these motions properties of the electric and magnetic fields in space can be deduced.

This launch will be a prelude to similar experiment in the spring of 1971, when a barium cloud will be released at an altitude of about 20,000 miles. That experiment, to study the earth's magnetic and electric fields will be launched from Wallops on a Scout launch vehicle.

The Langley experiment will be the first test of a liquid barium release. A chemical mixture containing barium will be mixed into a rocket fuel in the payload so that the barium vapor will be released through hypergolic reaction with the oxidizer in the shortest possible time--about two seconds.

The predawn launchings are scheduled for September 29, a Javelin four-stage rocket, and September 30, a Nike-Tomahawk two stage rocket. Launch windows for the releases occur daily just prior to sunrise between 4:50 and 5:40 a.m. EDT. If weather conditions are unfavorable, attempts will be made on successive mornings with slight variations in launch times.

The cloud releases will be made at times when ground-based optical observation stations are in darkness, but when the barium vapor will be illuminated by the Sun. The ionized clouds are created by ultraviolet radiation from the Sun impinging on the free barium expelled during the release process.

The container in the MPI Javelin payload is filled with a mixture of barium chips and copper oxide which is released instantaneously at an altitude of about 560 miles and some 350 miles offshore.

The cloud expands rapidly so that the cloud will appear about the diameter of the Moon within five seconds. The rapid expansion may create an illusion that the cloud is rapidly approaching the observer. The ionization process occurs some 20 seconds after release and expands in an elongated pattern about 300 miles long along the Earth's magnetic field. The cloud will be visible for 30 or more minutes.

The Langley Nike-Tomahawk experiment will be the first to use liquid fluorine. A fuel tank in the payload will contain hydrazine mixed with barium salts. The fluorine oxidizer will be carried in a separate tank at a temperature of about 320 degrees below zero F. The fuel and oxidizer are hypergolic in that they burn on contact and the barium is released in a trail near apogee giving the cloud a cucumber shape.

In both clouds, the vaporized barium at first appears light green tinged with red. Momentarily a dark blue cloud, the ionized barium,

emerges and forms an elongated pattern along the lines of the Earth's magnetic field.

Under the terms of the cooperative international agreement for the Javelin launch, the Max Planck Institute designed and built the payload equipment and NASA provided launch vehicle and launch services. Both are providing optical instrumentation for data acquisition in support of their respective scientific interests.

The German scientists for the experiment are Dr. Reimar Lüst and Dr. Gerhard Haerendel of the Max Planck Institute. Hans Neuss of MPI is project manager.

Wallops Station is responsible for NASA project management and data acquisition systems management. William A. Brence is Wallops project manager. Robert E. Carr is data acquisition systems manager. Wendell H. Lee is project engineer. Norman Peterson of the Goddard Space Flight Center is vehicle systems manager.

For the Langley Nike-Tomahawk experiment, project manager is Hal T. Baber, Jr. Dempsey B. Bruton, Jr. is Wallops Project engineer.

For both the MPI and the Langley experiments, David Adamson of NASA's Langley Research Center, is the NASA project scientist.



# NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Wallops Station, Wallops Island, Virginia 23337  
TELEPHONE: VALLEY 4-3411 - EXTS. 584 and 579

FOR RELEASE: MONDAY, September 28, 1970

Release No. 70-12

## RADIO BLACKOUT TEST SCHEDULED

The National Aeronautics and Space Administration's Langley Research Center will launch an atmosphere entry flight experiment September 28 to study ways of preventing loss of radio signals from spacecraft returning to Earth.

A Langley-managed Scout will launch the experiment from NASA's Wallops Station, Wallops Island, Virginia.

The flight test, designated RAM C-C, is the third and last in the RAM series and is a continuation of NASA's Project Ram (Radio Attenuation Measurements) to study the problem of communicating through the ionized gas (plasma sheath) created around a spacecraft reentering the Earth's atmosphere at high speeds.

RAM C-C carries several interrelated on-board experiments. Two liquids -- water and Freon E-3 will be ejected into the plasma sheath to restore communications during the blackout period.

Water helps to restore communications by cooling the plasma. Freon E-3 (similar to the coolant in refrigerators) is an electrophilic liquid which attracts free electrons and thus reduces their numbers.

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The relative effectiveness of the two liquids will be measured by on-board plasma diagnostic instruments. The instruments will measure the number and location of electrons and ions in the plasma around the spacecraft as each of the materials is ejected and also when no material is being added to the plasma. Primary ionization measurements will be made by 20 electrostatic probes and supplementary measurements will be made with a single microwave diagnostic antenna (reflectometer).

Norman D. Akey is the Langley Project Manager. R. D. English, Langley, is Project Manager for Scout. William L. Lord, Wallops Station, will serve as Test Director for countdown and launch. Joseph R. Duke, Wallops, is responsible for coordinating range and tracking operations. Jack Levine, NASA Headquarters, Office of Advanced Research and Technology, is RAM C-C Project Officer.

-END-



I N F O  
NASA-PP  
10/1/70

RELEASED AT WALLOPS 9/30/70  
Radio Blackout Test Conducted

The National Aeronautics and Space Administration conducted an atmosphere entry flight experiment today to explore ways of preventing loss of radio signals from spacecraft returning to Earth.

A 296-pound payload was rocketed on a brief flight over the Atlantic Ocean from NASA's Wallops Station, Wallops Island, Va. The launch vehicle, a four-stage Scout, lifted off at 4:06 p.m. EDT.

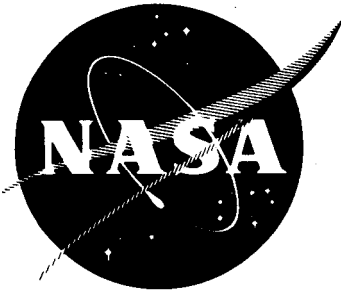
Preliminary data indicated the experiment package followed the planned eight-minute ballistic trajectory, reaching a peak altitude of more than 130 miles, and covering 725 miles before splashdown about 150 miles northeast of Bermuda.

The test was the third and last in NASA's Project RAM (Radio Attenuation Measurements) to study the problems of communicating through the ionized gas (plasma sheath) created around a spacecraft reentering the Earth's atmosphere at high speeds. The project is managed by the NASA Langley Research Center, Hampton, Va.

The relative effectiveness of the two liquids, water and freon, in restoring communications were to be measured by on-board instruments and transmitted to ground receiving stations and to aircraft and ships in the Bermuda area during reentry at about 17,000 miles per hour (25,000 feet per second).

The results are applicable to advanced lifting bodies, space shuttles, and spacecraft returning from lunar and planetary missions.

-end-



# NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Wallops Station, Wallops Island, Virginia 23337  
TELEPHONE: VALLEY 4-3411 - EXTS. 584 and 579

FOR RELEASE: THURSDAY, OCTOBER 1, 1970

Release No. 70-13

## RADIO BLACKOUT TEST CONDUCTED

The National Aeronautics and Space Administration today conducted an atmosphere entry flight experiment to explore ways of preventing loss of radio signals from spacecraft returning to Earth.

A 296-pound payload was rocketed on a brief flight over the Atlantic Ocean from NASA's Wallops Station, Wallops Island, Virginia. The launch vehicle, a four-stage Scout, lifted off at 4:06 p.m. EDT. yesterday.

Preliminary data indicated the experiment package followed the planned 8-minute ballistic trajectory, reaching a peak altitude of more than 130 miles, and covering 725 miles before splashdown about 150 miles northeast of Bermuda.

The test was the third and last in NASA's Project RAM (Radio Attenuation Measurements) to study the problems of communicating through the ionized gas (plasma sheath) created around a spacecraft reentering the Earth's atmosphere at high speeds. The project is managed by the NASA Langley Research Center, Hampton, Virginia.

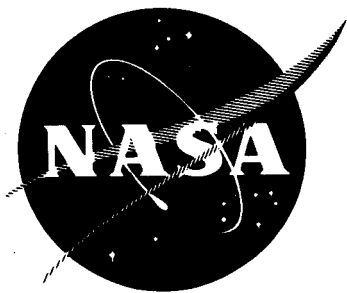
The relative effectiveness of the two liquids, water and freon, in restoring communications were to be measured by on-board instruments,

-more-

and transmitted to ground receiving stations, and aircraft and ships located in the Bermuda reentry area, during reentry at about 17,000 miles per hour (25,000 feet per second).

The results are applicable to advanced lifting bodies, space shuttles and spacecraft returning from lunar and planetary missions.

-END-



# NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Wallops Station, Wallops Island, Virginia 23337  
Telephone: Valley 4-3411 - Exts. 584 and 579

FOR RELEASE: MONDAY A.M., October 5, 1970

Release No. 70-14

## GERMAN BARIUM CLOUD EXPERIMENT LAUNCHED AT WALLOPS

A cooperative experiment between the Max Planck Institute of Munich, Germany, and the National Aeronautics and Space Administration was launched from Wallops Island, Va., at 5:05 a.m. EDT today.

The large colorful cloud, illuminated by the sun's rays, was visible for hundreds of miles. Reports of sightings have been received from Portland, Me.; Greenville, N. C.; and Minneapolis, Minn. A similar launch is scheduled for 5:41 a.m. EDT on Wednesday, October 7, weather permitting.

Launched on a four-stage Javelin sounding rocket, today's experiment ejected a barium cloud at an altitude of about 560 statute miles. The artificial cloud first appeared light green tinged with red. As the barium became ionized by solar radiation, the ionized cloud became attached to the earth's magnetic field to form an elongated pattern, several hundred miles long.

This launch is a prelude to a similar experiment in the spring of 1971, when a barium cloud will be released at an altitude of about 20,000 miles. That experiment, to study the earth's magnetic and electric fields will be launched from Wallops on a Scout launch vehicle.

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# NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

WALLOPS STATION, WALLOPS ISLAND, VIRGINIA 23337

TELEPHONE: VALLEY 4-3411 - EXTS. 584 and 579

FOR RELEASE: WEDNESDAY A.M., October 7, 1970

Release No. 70-15

## PREDAWN BARIUM CLOUD EXPERIMENT

### LAUNCHED AT WALLOPS

NASA conducted a barium vapor cloud experiment at 5:48 a.m.

EDT today at Wallops Island, Va.

Although visible for several hundred miles, the glowing artificial cloud, illuminated by the sun's rays, was not visible over as great a distance as expected.

Launched on a two-stage Nike-Tomahawk sounding rocket, today's experiment ejected a barium cloud at an altitude of about 160 statute miles. After ejection, the cloud expanded as a spherical shell and was visible to the unaided eye for approximately a minute. It was observed by photometric equipment for approximately 15 minutes.

This barium release payload was the first to use liquid fluorine. The fuel tank contained hydrazine mixed with the desired quantity of barium salts. The fluorine oxidizer was carried in a separate tank under cryogenic (very low temperature, about  $-320^{\circ}\text{F}$ ) conditions. The oxidizer reacted hypergolically (ignited spontaneously when mixed) with the fuel via a valve, manifold, and burner system at test altitude to produce a barium cloud in space.

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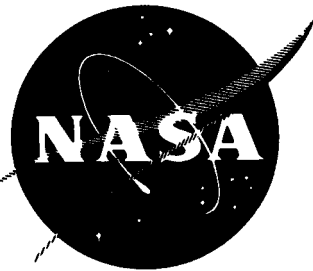
A similar predawn launch was conducted from Wallops on October 5 utilizing a four-stage Javelin rocket.

Data from experiments like these improve scientists' understanding of the electric and magnetic fields in the geomagnetosphere.

The artificial clouds were photographed and tracked from several sites along the East Coast.

David Adamson was the Project Scientist and Hal T. Baber, Jr., was the Project Manager, both of the NASA Langley Research Center. Dempsey B. Bruton, Jr., was the Wallops Project Engineer.

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# NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Wallops Station, Wallops Island, Virginia 23337  
TELEPHONE: VALLEY 4-3411 - EXTS. 584 and 579

FOR RELEASE: FRIDAY, OCTOBER 9, 1970

Release No. 70-16

## SPED FLIGHT CONDUCTED FROM WALLOPS

The National Aeronautics and Space Administration conducted a parasol-popping experiment today from Wallops Station, Wallops Island, Virginia to gather data on a parachute designed to help land scientific instruments on Mars.

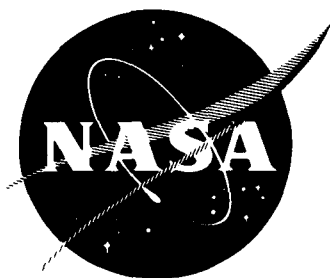
The rocket-launched SPED (Supersonic Planetary Entry Decelerator) high-altitude experiment was lofted above the Atlantic Ocean at 1:57 p.m. EDT by a single-stage Castor rocket with two smaller Recruit rockets attached for additional thrust.

About 45 miles above the ocean, the 3,052 pound SPED payload was to separate from the Castor booster and coast to approximately 57 miles above the ocean before descending. At 44 miles during descent, the conical 15-foot diameter aeroshell was to be popped open like a parasol to simulate a Mars entry spacecraft speeding through thin atmosphere. The parachute was to open behind the aeroshell.

Preliminary data indicated the sequence of flight events went as planned. It may take several days to assess the success of the experiment.

Recovery from the ocean surface of the on-board cameras and test equipment was accomplished by Wallops helicopter about 70 miles southeast of the launch site. The aeroshell was to be recovered from the ocean surface or floor by the USNS Range Recoverer assisted by Naval divers.

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# NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Wallops Station, Wallops Island, Virginia 23337  
Telephone: Valley 4-3411 - Exts. 584 and 579

FOR RELEASE: 1:30 a.m. EST Monday  
November 9, 1970

Release No. 70-17

## Wallops Launches Two Spacecraft

Two spacecraft were orbited today by a single launch vehicle fired from the National Aeronautics and Space Administration's Wallops Station on Virginia's Atlantic shore.

An OFO spacecraft, containing two live frogs for use in a medical experiment related to understanding man's balance mechanism, and an RM spacecraft, with radiation and meteoroid experiments aboard, lifted off at 1:00 a.m. EST on a four-stage Scout launch vehicle.

Preliminary tracking and data reports indicated the launch sequence went as planned. The two spacecraft separated about nine minutes after liftoff and were to orbit near each other, at altitudes ranging from about 200 to 370 miles.

-END-





# NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Wallops Station, Wallops Island, Virginia 23337  
TELEPHONE: VALLEY 4-3411 - EXTS. 584 and 579

FOR RELEASE: MONDAY P.M.  
November 9, 1970

Release No. 70-18

## DATA SENT FROM FROGS IN ORBIT

Two live bullfrogs orbited the earth every  $1\frac{1}{2}$  hours today in an experiment aimed at providing new information on how man's inner ear helps him keep his balance.

After several hours in orbit, the frogs were reported in good condition and the spacecraft was transmitting scientific data on the functioning of their otolith sensor cells. A frog's otolith functions much like that in man's inner ear.

The National Aeronautics and Space Administration's Orbiting Frog Otolith satellite was launched at 1:00 a.m. EST today from NASA's Wallops Station, Wallops Island, Virginia. Riding piggy-back on the Scout launch vehicle was a RM spacecraft with radiation and meteoroid experiments. The OFO and RM satellites separated about nine minutes after launch.

The frogs will be monitored for about five days alternately in weightless conditions and periods of partial gravity created by spinning them in the centrifuge that houses them. Fifty revolutions per

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minute provides a  $\frac{1}{2}$  G acceleration condition. One G is the force of normal gravity on earth.

Electrodes implanted in the vestibular (inner ear) nerves leading from the sensor cells in the otoliths of the frogs will enable scientists to study for the first time the electrical responses of the otolith sensors during hours of weightlessness and controlled acceleration.

The OFO and RM spacecrafts are orbiting near each other at altitudes ranging from about 180 to 315 miles and in an orbital plane angled 37.4 degrees to the equator. One revolution requires 92.8 minutes.

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# NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

WALLOPS STATION, WALLOPS ISLAND, VIRGINIA 23337  
TELEPHONE: VALLEY 4-3411 - EXTS. 584 and 579

FOR RELEASE: TUESDAY P.M.  
NOVEMBER 10, 1970

Release No. 70-19

## OFO SPACECRAFT CONTINUES TO TRANSMIT USEFUL SCIENTIFIC DATA

Two instrumented bullfrogs conducted themselves so well during their first 24 hours in space that National Aeronautics and Space Administration ground controllers today began the second phase of their orbiting carrousel program.

The two frogs are housed in a centrifuge that can be programmed for sequence of acceleration experiences or the calm of weightlessness. Purpose of the experiment is to learn more about how man's inner ear helps him keep his balance.

After 36 hours in earth orbit, the two bullfrogs were reported in good physical condition with the OFO spacecraft transmitting useful scientific data.

The Orbiting Frog Otolith (OFO) satellite was launched at 1:00 a.m. EST Monday, November 9, from NASA Wallops Station, Wallops Island, Virginia, on a Scout launch vehicle.

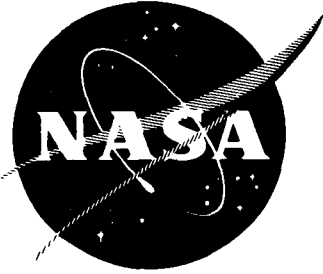
The frogs, which have electrodes implanted in the vestibular (inner ear) nerves leading from the otolith sensor cells, will be monitored for three or more days. Frog otoliths function much like those in man's inner ear.

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An RM (Radiation and Meteoroid) satellite which was launched on the same Scout vehicle is orbiting near the frogs. Both the radiation and meteoroid experiments have been activated.

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RELEASE NO. 70-20

# NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Wallops Station, Wallops Island, Virginia 23337

TELEPHONE: VALLEY 4-3411 - EXTS. 584 and 579

FOR RELEASE: THURSDAY A.M., NOVEMBER 12, 1970

## FROG MISSION SUCCESSFUL

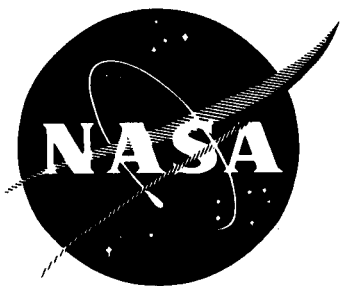
An earth-orbiting experiment involving two bullfrogs today established itself as a mission success.

The instrumented frogs early this morning completed 72 hours of flight during which all primary and secondary research objectives were met. Because the frogs and their OFO spacecraft continue to function well, the mission will go on for several more days to obtain a bonus amount of data.

The OFO, for Orbiting Frog Otolith, experiment is a National Aeronautics and Space Administration project aimed at providing new information on how man's inner ear helps him keep his balance.

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# NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

WALLOPS STATION, WALLOPS ISLAND, VIRGINIA 23337  
TELEPHONE: VALLEY 4-3411 - EXTS. 584 and 579

FOR RELEASE: NOVEMBER 25, 1970

Release No. 70-21

## REENTRY EXPERIMENT CONDUCTED AT WALLOPS

A four-stage Trailblazer II rocket was launched yesterday by the National Aeronautics and Space Administration's rocket launch facility at Wallops Island, Virginia, in support of an Air Force program on reentry communications. The experimental payload, provided by the Air Force Cambridge Research Laboratories (AFCRL), Bedford, Massachusetts, was designed to measure plasma effects upon microwave systems during reentry.

A 75-pound payload was lofted on a brief flight over the Atlantic Ocean to a peak altitude of approximately 200 miles. The Trailblazer launch vehicle lifted off at 6:56 p.m. EST.

Objective of the AFCRL program is to study techniques for improving the transmission of radio signals from aerospace vehicles during reentry into the earth's atmosphere. Complete blackout of communication and radar systems can be caused by the plasma sheath during this critical terminal phase of the trajectory. A satisfactory solution to this reentry problem requires the careful measurement of plasma properties and their effect on the transmission of radio signals, which was accomplished by this flight. The results of these studies are used to develop

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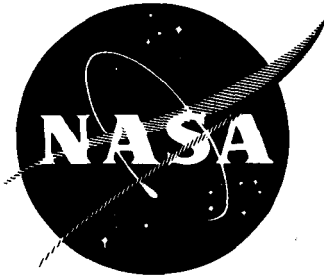
techniques which predict the exact behavior of a radiating system, allowing optimum choice of antenna and microwave system parameters.

The present experiment was designed primarily to obtain measurements of reentry effects upon microwave antennas at S-band wavelengths. Electron density measurements were also made with a variety of flush-mounted plasma probes, including electrostatic, conductivity, and stripline types. These diagnostic results are used to determine the electrical characteristics of the flow fields about the vehicle.

In today's flight two of the four stages of the solid-fuel rocket propelled the experimental payload to apogee. The final two stages were used to drive the nose cone back into the earth's atmosphere at the desired reentry speeds of eighteen thousand feet per second.

Major L. R. Maloney designed the experiment and served as the AFCRL project engineer. The payload was built by Mr. R. Sukys of Northeastern University (Boston, Massachusetts). Mr. Earl B. Jackson was in charge of the rocket launch as the NASA Wallops Project Engineer.

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# NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

WALLOPS STATION, WALLOPS ISLAND, VIRGINIA 23337

TELEPHONE: VALLEY 4-3411 - EXTS. 584 and 579

FOR RELEASE: NOVEMBER 25, 1970

Release No. 70-22

## NRL EXPERIMENT LAUNCHED AT WALLOPS

The National Aeronautics and Space Administration yesterday launched an experiment to determine the source of the diffuse far-ultraviolet radiation of the night sky for the Naval Research Laboratory (NRL).

The 228-pound payload was lofted at 10:17 p.m. EST on a three-stage solid propellant rocket obtained as surplus from the Air Force. The unguided, ballistic, space probe rocketed to a peak altitude of about 1,000 statute miles and impacted in the Atlantic Ocean some 25 minutes later.

The primary objective of this experiment was to measure, over a wide range of wavelengths, the intensity, spatial distribution and altitude variation of the diffuse far-ultraviolet radiation of the night sky, and thereby determine its source (i.e., atmospheric, interplanetary, interstellar, or intergalactic). The secondary objective of this experiment was to measure, over a wide range of wavelengths, the far-ultraviolet radiation from stars and other discrete sources.

NRL has conducted similar, less complicated, experiments from the White Sands Missile Range in New Mexico in a continuing program to study celestial ultraviolet radiation.

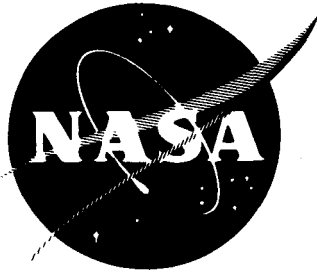
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William H. Conway is the NRL project engineer and Dr. George R. Carruthers is the NRL principal investigator and Dr. Charles Weller, co-investigator. Joseph R. Duke is the Wallops project manager, Bobby J. Flowers is the vehicle systems manager, and Wendell H. Lee is the Wallops project engineer.

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# NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

WALLOPS STATION, WALLOPS ISLAND, VIRGINIA 23337  
TELEPHONE: VALLEY 4-3411 - EXTS. 584 and 579

FOR RELEASE: MONDAY, DECEMBER 7, 1970

Release # 70-23

## CHEMICAL CLOUD TO BE VISIBLE

### ALONG EAST COAST

Weather conditions permitting, a huge glowing, colored cloud will be formed high over the mid-eastern coast at dawn tomorrow, December 8.

The National Aeronautics and Space Administration plans to launch a series of five rocketborne chemical vapor trail experiments from Wallops Island, Virginia, Station for meteorological research in the upper atmosphere. The prime objective of the experiments is to compare chemical vapor measurements of atmospheric winds and diffusion with the east-west components of meteor shower winds.

The series will begin at 10:00 p.m. EST today, (December 7), and continue at two-hour intervals throughout the night, ending at dawn tomorrow, (December 8). Two-stage Nike-Apache sounding rockets will be used to loft the experiments, utilizing two different chemicals--trimethylaluminum (TMA) and sodium.

The first four payloads will contain trimethylaluminum (TMA) which generates pale white clouds (less visible than a sodium cloud). The dawn launch will utilize sodium vapor which will generate a reddish-orange cloud visible for hundreds of miles along the East Coast.

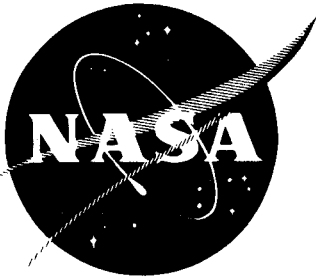
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Data on wind conditions are obtained by photographing the motion of the vapor trails from five camera sites within a 100-mile radius of Wallops Island, requiring good visibility. If tonight's weather conditions are unsatisfactory, the experiments will be rescheduled on a day-to-day basis.

A similar series was conducted at Wallops last January.

The launchings are being conducted in cooperation with the GCA Corporation, Bedford, Massachusetts, under contract to NASA's Goddard Space Flight Center, Greenbelt, Maryland. E. Benjamin Jackson is the Wallops Station Project Engineer, responsible for coordinating pre-launch, launch, and tracking operations.

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Release No. 70-24

# NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

WALLOPS STATION, WALLOPS ISLAND, VIRGINIA 23337

TELEPHONE: VALLEY 4-3411 - EXTS. 584 and 579

FOR RELEASE: THURSDAY, DECEMBER 10, 1970

## WALLOPS LAUNCHES GERMAN BIOSONDE EXPERIMENT

The National Aeronautics and Space Administration at 11:27 a.m. EST today launched the first of two Biosonde rockets for the West German Federal Ministry for Education and Science. The second launch is tentatively scheduled for Monday, December 14. The two-stage Nike-Tomahawk sounding rocket, launched from the NASA Wallops Island, Virginia station, carried live animals (leeches) in a Biosonde to an altitude of 160 statute miles sufficient for  $7\frac{1}{2}$  minutes of weightless flight.

The primary objective of the flight was to test under weightless conditions a newly developed life support system designed for use in a satellite. The secondary objective was to obtain information on the behavior of the leeches when subjected to the high stress conditions of a rocket launch.

Data were obtained on the operation of the specially designed oxygen producing electrolytic cell which is an integral part of the life support system built into each Biosonde. Specifically, the electrical current utilized by each cell was monitored throughout the flight to determine the operational characteristics of the electrolytic cells under a weightless condition. Data were also obtained on the leeches' behavior by monitoring throughout the flights the movement of the animals contained in the Biosondes.

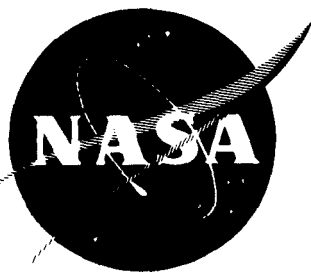
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These launchings are being carried out on a reimbursable basis in support of bioinstrumented tests for the University of Frankfurt, Germany. These tests are designed to prove biomedical organisms and instruments for possible space flight.

Recovery of the payload from the ocean surface was accomplished by the Wallops' recovery ship, the USNS Range Recoverer 85 nautical miles southeast of the launch site. The payload was returned to Wallops Station for post-flight examination by Wallops recovery helicopter.

The Principal Investigator, Dr. Robert Lotz and the Experiment Manager, Gary H. Bowman are from the University of Frankfurt, Frankfurt/Main, Germany. The Project Manager, Reiner Klett, is from the German Research Establishment for Aerospace, Oberpfaffenhoffen, Germany. Project Engineer for Wallops Station is Robert T. Long.

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Release No. 70-25

# NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

WALLOPS STATION, WALLOPS ISLAND, VIRGINIA 23337

TELEPHONE: VALLEY 4-3411 - EXTS. 584 and 579

FOR RELEASE: TUESDAY A.M., DECEMBER 15, 1970

## WALLOPS LAUNCHES FIVE ARTIFICIAL CLOUD EXPERIMENTS OVERNIGHT

The National Aeronautics and Space Administration conducted five experiments in an 8½-hour period last night and early today from its Wallops Island, Virginia, Station.

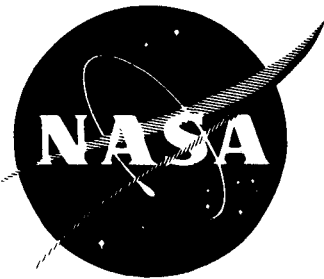
The launchings occurred at 10:08 p.m., 12:18 a.m., 2:00 a.m., 4:04 a.m., and 6:27 a.m. EST.

The first four experiments utilized trimethylaluminum (TMA) which generated pale white clouds, not easily visible to the naked eye. The dawn launch was a sodium vapor experiment which created a huge reddish-orange cloud visible for hundreds of miles along the East Coast. All five experiments were lofted on board two-stage Nike-Apache sounding rockets.

Purpose of these experiments was to compare chemical vapor measurements of atmospheric winds and diffusion with the east-west components of meteor shower winds.

These rocketborne experiments are part of a continuing program for meteorological research in the upper atmosphere being carried on by NASA's Goddard Space Flight Center, Greenbelt, Maryland. J. F. Bedinger of the GCA Corporation, under contract to Goddard, is the Project Director for the series, with David U. Wright of Goddard, the Project Scientist. Project Engineer for the Wallops launch operations is E. Benjamin Jackson.

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# NEWS RELEASE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Wallops Station, Wallops Island, Virginia 23337

TELEPHONE: VALLEY 4-3411 - EXTS. 584 and 579

FOR RELEASE: WEDNESDAY, DECEMBER 16, 1970

Release No. 70-26

## Wallops Launches Second German Biosonde Experiment

The National Aeronautics and Space Administration at 11:39 a.m. EST today launched the second of two Biosonde rockets for the West German Federal Ministry for Education and Science. The first launch was conducted at 11:27 a.m. EST on Thursday, December 10. The two-stage Nike-Tomahawk sounding rocket, launched from the NASA Wallops Island, Virginia station, carried live animals (leeches) in a Biosonde to an altitude of 153 statute miles.

The primary objective of these flights was to test under weightless conditions a newly developed life support system designed for use in a satellite. The secondary objective was to obtain information on the behavior of the leeches when subjected to the high stress conditions of a rocket launch.

Data were obtained on the operation of the specially designed oxygen producing electrolytic cell which is an integral part of the life support system built into each Biosonde. Specifically, the electrical current utilized by each cell was monitored throughout the flight to determine the operational characteristics of the electrolytic cells under a weightless condition. Data were also obtained on the leeches' behavior by monitoring

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throughout the flights the movement of the animals contained in the Biosondes.

These launchings are being carried out on a reimbursable basis in support of bioinstrumented tests for the University of Frankfurt, Germany. These tests are designed to prove biomedical organisms and instruments for possible space flight.

Recovery of the payload from the ocean surface was accomplished by the Wallops' recovery ship, the USNS Range Recoverer 85 nautical miles southeast of the launch site. The payload was returned to Wallops Station for post-flight examination by Wallops recovery helicopter.

The Principal Investigator, Dr. Robert Lotz and the Experiment Manager, Gary H. Bowman are from the University of Frankfurt, Frankfurt/Main, Germany. The Project Manager, Reiner Klett, is from the German Research Establishment for Aerospace, Oberpfaffenhoffen, Germany. Project Engineer for Wallops Station is Robert T. Long.

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